place! Who will provide support when accidents occur, a representative in Washington or somewhere else in the country? This is unacceptable! Who will be liable for the damages and expense resulting from these accidents?

Our highways and rail corridors are designed to connect population centers and to bring goods to market, not to transport high-level radioactive waste. Transporting this dangerous material via highway and rail pulls the City of Cleveland and the citizens of the City of Cleveland directly into harm's way. It will take a full-scale effort, well in advance of any transportation of radioactive material, to provide protection against the inevitable accidents. The cost of fully training and equipping the emergency responders, in all the cities along the transportation routes, to handle an accident involving high-level radioactive waste must be factored into the cost equation for the Yucca Mountain Project. The cost of the necessary preparation for accidents and liability for damages must be assigned to someone other than the local governments of cities standing, unfortunately, between the nuclear waste producers and the final disposal site.

Response
As required by Section 180(c) of NWPA, DOE would provide technical assistance and funds to states and for training public safety officials of appropriate units of local governments and Native American tribes through whose jurisdictions it would transport spent nuclear fuel and high-level radioactive waste. Training would cover procedures required for safe routine transportation of these materials, as well as for dealing with emergency response situations. DOE would institute its program to implement the requirements of Section 180(c) before beginning shipments to the repository. In the event of an incident involving spent nuclear fuel or high-level radioactive waste, the vehicle crew would notify local authorities and the central communications station monitoring the shipment. DOE would make resources available to local authorities as appropriate to mitigate such an incident. Sections M.3.2.2, M.5, and M.6 of the EIS contain more information on emergency response capabilities and the provisions and implementation of Section 180(c), respectively.

In the event of a nuclear accident or incident, the Price-Anderson Act establishes a system of private insurance and Federal indemnification that generally ensures that as much as $9.43 billion is available to compensate for damages suffered by the public, regardless of who causes the damages. Damages that occurred as a result of a nuclear accident or incident at the Yucca Mountain site or during the transportation campaign would be subject to the Price-Anderson indemnification. Section M.8 of the EIS contains more information on liability for nuclear incidents.

8.11 Transportation - Affected Environment and Impacts

8.11.1 LAND USE

8.11.1 (134)
Comment - 11 comments summarized
Commenters expressed concern that the Draft EIS did not adequately examine the impacts to land use from the construction of a rail line in Nevada. Specific concerns include impacts to recreation (camping, hiking, fishing, hunting, nature study, back Country travel, sightseeing, and Wilderness Areas); continued access to recreation areas due to blocked roads; mining and mineral resource potential (especially through parts of north Central Nevada where active mining is occurring and where the mineral potential is high); timber lands; and private property (including ranches and patented mining land). Some wanted to know if private property would be condemned along and near the rail line, and if so, would the property owners be given fair market value for their land.

Some commenters said that any rail line in Nevada would conflict with existing land-use plans developed by the Bureau of Land Management. The EIS will remain insufficient until a complete inventory of land use and land management impacts are addressed, particularly in consultation with affected Federal and State of Nevada land management agencies.

Others said that construction of a branch rail line would be much more destructive than the use of trucks on existing roads, especially considering that the rail line would be used only for several decades.

Response

In Chapter 8 of the EIS, DOE considered past, present, and reasonably foreseeable actions of DOE, other agencies, and other organizations in its presentation of cumulative impacts. Future actions, which were included, were based on publicly announced and approved future actions and have documented evidence (for example, a Proposed Action would have a scheduled start and obligated funding, or there are other demonstrations of commitment that an action would occur and should be considered).

Section 6.3 discusses the scope of land-use information deemed appropriate for assessing potential impacts on land use of transportation implementing alternatives in Nevada. The sources of information need to identify the current ownership of the land that would be disturbed, and the present and anticipated future uses of the land. The region of influence for land-use and ownership impacts consists of land areas that would be disturbed or whose ownership or use would be changed as a result of the construction and use of a branch rail line, intermodal transfer station, midroute stopover for heavy-haul trucks, and an alternative truck route near Beatty, Nevada. These disturbances in land use would include camping, hiking, fishing, hunting, nature study, back-country travel, sightseeing, mining, ranching, timber, and wilderness areas.

In its assessment of potential land-use impacts, DOE considered the differences between land-use types, land disturbances, land ownership, and the creation of barriers. The assessment compared proposed use of land for Yucca Mountain transportation purposes to existing or other proposed land uses to estimate the magnitude and context of potential conflicts. If an action would result in continuing a current land use either due to little or no impact or through mitigation, the effects were considered insignificant or small. For example, as discussed in Chapter 6 of the EIS, impacts to livestock and Bureau of Land Management grazing allotments could be mitigated through the use of fencing, overpasses, and underpasses, which could provide a water source to animals cut off from current sources. With these mitigating measures, the impacts would be lessened and considered small. If an action could result in departures from existing uses, and mitigation could not remedy the conflict, the effects could be more substantial. For example, as discussed in the Carlin and Caliente Corridor sections of Chapter 6 (Sections 6.3.2.2.1 and 6.3.2.2.2), the Bonnie Claire Alternate passes directly through the portion of the newly established Timbisha Shoshone Trust Lands near Scottys Junction. If this alternate was chosen, the construction of a branch rail line could limit or enhance economic development in the Timbisha Shoshone Trust Lands parcel and could limit the use for housing by restricting access. Factors considered included the uniqueness of a geographic area; presence of historic, scientific, and cultural resources; potential effects on endangered species; and compliance with Federal, State, or local law. Based on information available, potential land-use impacts associated with Yucca Mountain transportation activities could be minimized through judicious alignment of the branch rail line or through mitigation. Overall, the land-use impacts would not be substantial because of the use of various optional and alternate routes within the corridor, mitigation measures, and the judicious routing of the branch rail line within the corridor.

Additional information about impact-reduction features, procedures and safeguards, and mitigation measures under consideration are included in Chapter 9 of the EIS. Chapter 9 identifies ongoing studies that could eventually influence mitigation measures related to the project plan and design. For example, Section 9.3 discusses mitigation measures intended to address impacts from the possible construction of a branch rail line or an intermodal transfer station in Nevada; construction of other transportation routes; upgrading of existing Nevada highways to accommodate heavy-haul vehicles; transportation of spent nuclear fuel and high-level radioactive waste from existing storage sites to the proposed repository; and fabrication of casks and canisters. As suggested in the Foreword to the EIS, if DOE pursued consideration of a specific rail alignment within a corridor or a specific location of an intermodal transfer station or the need to upgrade the associated heavy-haul truck routes, more detailed field surveys, government consultation, analyses, and appropriate National Environmental Policy Act reviews would be conducted that would help ensure potential land-use conflicts associated with Yucca Mountain transportation activities were minimized.

The documents cited in Section 3.2.2.1.1 of the EIS are source documents used by DOE for land-use considerations, and they include possible future actions within the transportation corridor. The more notable land-use features and potential influences that exist on lands within the corridors are presented in Section 6.3.2. For example, the land features within the Carlin Corridor are presented in Section 6.3.2.2.2. The listing of communities in Section 6.3.2.2.2 serves two purposes: (1) to identify communities potentially affected by the Carlin Corridor and (2) as map reference points. Gold Acres and Tenabo are historic reference points in the vicinity of the Carlin Corridor.

Commenters are referred to the corridor-specific parts of Section 6.3.2.2, where DOE identifies potential conflicts with existing or future land uses and land-use plans that could be affected by a given corridor.

Regarding private property along the rail corridor, DOE is required to use fair market value in the acquisition of real property. DOE must comply with the policies contained in the Uniform Relocation Assistance and Real Property Acquisition Policies Act, Title III, which includes the provision that the Agency (DOE) offer just compensation.

8.11.1 (1015)
Comment - EIS000254 / 0005
The project should offer up-front a reverter clause or a right of first refusal to recover the property ownership once the 30-year period of usage has expired. The clause should also state that all lands will be restored to existing conditions with the reversion. The reversion price would be the price at which the land was purchased. This would have the effect of making family ownerships whole at the end of the usage term.

Response
This comment concerns land for the candidate Carlin branch rail line for transporting spent nuclear fuel and high-level radioactive waste. The Carlin Corridor evaluated in the EIS passes through the Crescent Valley region of Nevada.

Regarding private property along the rail corridor, DOE is required to use fair market value in the acquisition of real property. DOE must comply with the policies contained in the Uniform Relocation Assistance and Real Property Acquisition Policies Act, Title III, which includes the provision that the Agency (DOE) offer just compensation.

Prior to a decision to dispose of lands it no longer needed for transporting spent nuclear fuel and high-level radioactive waste to the repository, DOE would consider alternatives for disposition. These alternatives would include restoration of the lands to their prior existing conditions.

8.11.1 (1186)
Comment - EIS000114 / 0007
Isn't - isn't it amazing that the proposed railroad route happens to follow the Valley Electric easement lines coming from Jean?

And - and - and I happen to notice that - that we rendered into an agreement with Yucca Mountain to provide them with power.

I would like to see Valley Electric provide me with a written copy of that agreement to see in fact if they made agreements with the Department of Energy to allow transportation along the east side of 160 along their easement corridor for power.

Response
The Jean Rail Corridor is one of five candidate corridors that DOE is considering as a possible route to the proposed Yucca Mountain Repository. Each rail corridor at some point along its route crosses or passes adjacent to existing rights-of-way for utility or road corridors, as described in Section 3.2.2.1.1 of the EIS.

In Section 2.6 of the EIS, DOE identified rail as its preferred mode of transportation both nationally and in Nevada. At this time, DOE has not identified a preference among the five candidate rail corridors within Nevada. If the Yucca Mountain site was recommended and approved, DOE would issue at some future date a Record of Decision to select a mode of transportation. If, for example, mostly rail was selected (both nationally and in Nevada), DOE would then identify a preference for one of the rail corridors in consultation with affected stakeholders, particularly the State of Nevada. In this example, DOE would announce a preferred corridor in the *Federal Register* and other media. No sooner than 30 days after the announcement of a preference, DOE would publish its selection of a rail corridor in a Record of Decision. A similar process would occur in the event that DOE selected heavy-haul truck as its mode of transportation in Nevada.

8.11.1 (1239)
Comment - EIS000226 / 0002
Pages 25 and 26 of the County/City EIS Scoping Report note that construction and operation of a rail line may impair access to forage and water by domestic livestock. The DEIS indicates that rail corridors would cross grazing allotments but does not describe the impacts construction and use of a rail line would have on domestic livestock operations in Lincoln County.

Response
Land use and ownership impacts common to the construction and operation of all five of the branch rail lines are discussed Section 6.3.2.1 of the EIS and impacts specific to the Caliente Corridor are discussed in Section 6.3.2.2.1. The EIS determines that a branch rail line could create a barrier to livestock movement, and quantitatively addresses the acres of grazing lands potentially affected by candidate rail corridors.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

If a corridor was selected for construction of a branch rail line, DOE would conduct field studies along the corridor that would identify specific land uses to be avoided. DOE would avoid land-use impacts and private land to the maximum possible extent. For example, access to grazing areas, forage, and water could be addressed in the early design phase of the rail corridor/alignment. This process would address Bureau of Land Management standard operating procedures for rights-of-way, construction and operation. Water wells would be required along the rail corridor in some areas for soil compaction and dust control during rail construction. It could be possible to improve grazing allotments if the Bureau permitted the use of this water for grazing. Grazing allotment access could be accomplished by designing at-grade structures to permit cattle to cross underneath the railbed.

8.11.1 (1553)
Comment - EIS000357 / 0012
Page 1-14. 1.4.1. Is DOE considering withdrawal of rail and highway transport routes that would be constructed exclusively for transport of canisters to Yucca Mountain?

Response
For purposes of analysis, DOE assumed rail lines in Nevada for transporting spent nuclear fuel and high-level radioactive waste to Yucca Mountain would be devoted exclusively to the transport of materials to the repository (see Section 2.1.3.2.2 of the EIS). However, shared use could be considered later. For national highways and railways (non-Nevada) and Nevada highways, DOE is not considering exclusive use.

However, if the Yucca Mountain site was approved, and mostly rail selected as the transportation mode, then DOE would construct a branch rail line from an existing main track in Nevada to the site. DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, DOE would consider the potential for shared use of the branch rail line, as discussed in Section 8.4.2 of the EIS. If the site was approved, then decisions regarding shared use would be made.

8.11.1 (1689)
Comment - EIS000804 / 0001
I live in Austin, Nevada. I understand that you folks want to put a nuclear railroad line running down behind my town. [It's] to run from [Beowawe] to Yucca Mountain. [It's] called the "Carlin" route.

Have you talked with the Forest Service? They want to shut down a bunch of roads so as to make some of the R.R. right-o-ways into [scenic] or "Wilderness" areas.

How come you can run a nuke train thru [potential] wilderness areas? What does the Forest Service say?

Response
Appendix C of the EIS addresses interagency and intergovernmental interactions. Although the Department has initiated many interactions (see Table C-1) and has received many requests for cooperating agency status (see Table C-2), the Department has not discussed this subject on a formal basis with the U.S. Forest Service. However, discussions regarding wilderness study areas and existing wilderness areas have occurred with the Bureau of Land Management.

Table J-38 of the EIS indicates that the Steiner Creek Alternate of the Carlin Corridor passes close to, but not through, the Steiner Creek Wilderness Study Area. Results of discussions with the Bureau of Land Management indicated that the corridor would not have an impact on wilderness areas or Wilderness Study Areas if a branch rail line was built.

8.11.1 (2204)
Comment - EIS000615 / 0002
Lander County has a public federally administrated land plan manual that is just coming into effect. I know you haven't taken that into consideration, but it will be available.

Response
DOE did obtain and review the *Lander County Revised Policy Plan for Federally Administered Lands* (DIRS 157310-Lander County 1999), as well as closely associated resource management plans issued by the Elko and Battle Mountain Districts of the Bureau of Land Management. The Lander County Policy Plan was developed to provide state and locally developed land management policies for use by the various Federal land management agencies. While DOE cannot at this time definitively identify specific tracts of land that could be affected along the Carlin Corridor (which traverses Lander County), DOE is sensitive to and aware of plan elements such as the County's desire to see certain Federal lands prospectively transferred to the private sector (see Appendix A of the Lander County Policy Plan). A number of other plan elements are to one extent or another considered in this EIS. For example, DOE has incorporated the best available population data from the Nevada State Demographer into its estimates of the socioeconomic impacts to the State, including Lander County; has identified mitigation measures that could be useful in the minimization of impacts to animal grazing units; and has identified the rail corridor's proximity to recreation and wildlife management areas, known cultural resource sites, and other potentially sensitive features. In the initial siting of potential transportation corridors, the Department attempted to minimize traversing private lands while remaining within engineering specifications. Should the Carlin rail corridor be selected as a likely transportation route for spent nuclear fuel and high-level radioactive waste, DOE would conduct more detailed route investigations.

8.11.1 (2324)
Comment - EIS000614 / 0011
The following issue needs to be addressed and thoroughly analyzed concerning direct impacts to Lander County in a detailed manner: the wilderness areas.

Response
Section 6.3.2.2.2 of the EIS provides a discussion of the Carlin Corridor implementing alternative, including potential impacts on land use and ownership and biological resources. Table J-42 indicates that the Steiner Creek Alternate of the Carlin Corridor pass close to, but not through, the Steiner Creek Wilderness Study Area. Results of discussions with the Bureau of Land Management indicated that the corridor would not have an impact on wilderness areas or Wilderness Study Areas if a branch rail line was built.

8.11.1 (2615)
Comment - EIS000692 / 0004
On page 3-121 in the chapter on affected environment, the DEIS states that: "Rainbow Canyon is used for variety of recreational purposes and is a route for the Union Pacific Railroad." I'm sure that many ranchers down the canyon would be delighted with the description of their livelihood.

Response
The quote from Section 3.2.2.2 of the Draft EIS is correct. The EIS has been modified to include ranching as an existing land use of Rainbow Canyon in Section 3.2.2.2.1.

8.11.1 (2747)
Comment - EIS000641 / 0006
The third area is near and dear to my heart and probably a few others in here, it is called property, taking of. The corridor as marked on the map, every other mile will probably pass through a portion of private property. Now, will this just be condemned? Will the people be compensated? Will it be assessed as market value? Will it be assessed at the BLM [Bureau of Land Management] value of the neighboring properties? Those questions weren't answered to my satisfaction.

Recreation and ranching, land use. We have a tremendous amount of trails, access roads, Jeep trails, some you can even barely walk on, some horses break their legs on, but they are all trails and usable all the time. We put this quarter mile corridor through here, are these trails going to be blocked off and have limited access? I didn't find that addressed either. And if they are blocked off and limited access, then you have just taken a lot larger portion of the property away from the citizens of the area than the quarter mile corridor.

And that also holds true for the ranchers for their historical or their - not historical, I guess. They haven't been here long enough to be history. But their normal ways of moving their livestock and animals and moving from place to place on their rangeland, grazing land, grazing permits, et cetera.

The other one was the corridors. It doesn't address that either, whether the corridors will be fenced and whether these corridors, if they are fenced, who is going to police them. The fence is just a novelty if you don't have somebody back there to kick you out of it.

Response
As discussed in Section 2.3.3.1 of the EIS, DOE chose candidate rail corridors in Nevada to maximize the use of Federal lands (with the exception of U.S. Air Force-controlled lands), provide access to regional rail carriers, and minimize, to the extent possible, obvious land-use conflicts. As discussed in Section 6.3.2.2, all of the candidate branch rail lines would require the use of mostly Federal land and very little private land. For example, the Caliente and Valley Modified Corridors would require the use of almost no private land (less than 1 percent). The Carlin and Jean Corridors would require only 7 and 5 percent private land, respectively.

Regarding private property along the rail corridor, the DOE is required to use fair market value in the acquisition of real property. The DOE must comply with the policies contained in the Uniform Relocation Assistance and Real Property Acquisition Policies Act, Title III, which includes the provision that the Agency (DOE) offer just compensation.

DOE acknowledges the recreational resources afforded by open space within parts of Nevada. In Section 6.3.2 of the EIS, DOE identifies potentially affected natural resource areas within each corridor. DOE would seek to minimize any restriction to or control over public lands used for recreational purposes and would develop specific mitigation measures to alleviate potential impediments to continued use of public lands. A branch rail line could be constructed across a trail or road access. However, access would not be restricted with the exception of that portion where the actual roadbed was constructed. Access to either side of a valley traversed by a branch rail line would be possible. Sufficient crossing structures would be constructed to allow access from either side.

Land use and ownership impacts common to the construction and operation of all five of the branch rail lines are discussed Section 6.3.2.1 of the EIS and impacts specific to each route are discussed in the appropriate subsection. The EIS determines that a branch rail line could create a barrier to livestock movement, and quantitatively addresses the acres of grazing lands potentially affected by proposed rail corridors.

If a corridor was selected for construction of a branch rail line, DOE would conduct field studies along the corridor that would identify specific land uses to be avoided. For example, access to grazing areas, forage, and water could be addressed in the early design phase of the rail corridor/alignment. This process would address Bureau of Land Management standard operating procedures for rights-of-way, construction, and operation. Water wells would be

required along the rail corridor in some areas for soil compaction and dust control during rail construction. It could be possible to improve grazing allotments if the Bureau permitted the use of this water for grazing. Grazing allotment access could be accomplished by designing at-grade structures to permit cattle to cross underneath the railbed.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

8.11.1 (2826)
Comment - EIS001056 / 0001
We have reviewed the proposed rail corridor to link the UP [Union Pacific Railroad] line located in Carlin, Nevada to the Yucca Mountain facility. We note that all possible routes must pass through our Forest Service and BLM [Bureau of Land Management] winter grazing allotments.

If this project is to be [implemented], there are several factors that must be addressed to minimize the effects it would have on our permit and also to [ensure] the safe passage of rail traffic on this line.

Due to the topography of the area, there are few watering locations for our livestock to water. This is especially evident in the Rye Patch Canyon and the Smokey Valley portions of our grazing allotment. It is [mandatory] and obvious for the safety of this rail line that it be fenced on both sides to prevent not only grazing cattle but the wild horse and antelope populations from derailing a shipment. Since it is not hauling a load of potatoes, I think that this would only be obvious to insure [ensure] safe passage.

For this reason it would impair the ability of our livestock to utilize our permit without adequate [trestles] or DOE installed watering locations on both sides of the line.

Response
Land-use and ownership impacts common to the construction and operation of all five of the branch rail lines are discussed Section 6.3.2.1 of the EIS and impacts specific to the proposed Carlin route are discussed in Section 6.3.2.2.2. The EIS determines that a branch rail line could create a barrier to livestock movement, and quantitatively addresses the acres of grazing lands potentially affected by candidate rail corridors.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

If a corridor was selected for construction of a branch rail line, DOE would conduct field studies along the corridor that would identify specific land uses to be avoided. DOE would avoid land-use impacts and private land to the maximum possible extent. For example, access to grazing areas, forage, and water could be addressed in the early design phase of the rail corridor/alignment. This process would address Bureau of Land Management standard operating procedures for rights-of-way, construction and operation. Water wells would be required along the rail corridor in some areas for soil compaction and dust control during rail construction. It could be possible to improve grazing allotments if the Bureau permitted the use of this water for grazing. Grazing allotment access could be accomplished by designing at-grade structures to permit cattle to cross underneath the railbed.

8.11.1 (2940)
Comment - EIS001195 / 0002
Because of the nature of our business and the required permitting processes, Cortez Gold Mines has extensively studied the physical environment in the area. As such, we have detailed geologic, hydrologic, and other information which may be of interest to DOE should the Carlin route be seriously considered. We would be willing to discuss and perhaps share this data with DOE to help avoid or mitigate potential impacts.

Response
DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and the Carlin Corridor selected, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use. Cortez Gold Mines would be a part of these consultations and studies for selection of the final rail alignment.

8.11.1 (3066)
Comment - EIS000619 / 0006
Because over 87 percent of our county is managed by the Bureau of Land Management, it seems that more input is required from that agency regarding the variety of impacts that the rail route could have on land and resources that they manage.

We were surprised to read in Appendix C that the Department only met once with BLM and that there are no ongoing communication or interactions mentioned regarding the Department's multi-faceted proposal.

We would hope that BLM would not hold the Department's proposed action to any lesser standard than they require of the mining and the ranching industries.

Response
In the course of preparing the EIS, DOE coordinated with a number of government agencies and other organizations, including the Bureau of Land Management, by conducting formal consultations as required by the National Environmental Policy Act. Appendix C of the EIS documents these interagency and intergovernmental consultations. Nonetheless, Appendix C does not include the many staff-level interactions that occurred between the Bureau and DOE and were necessary for the development of the EIS. Information exchanges have occurred frequently in the past and are ongoing. These range from DOE providing informal status reports to the Bureau providing Geographic Information System data for utility corridors.

Should the Yucca Mountain site be approved, the branch rail line implementing alternative be selected, and a preferred rail corridor identified, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

8.11.1 (3164)
Comment - EIS001195 / 0001
Cortez Gold Mines is a large surface mining operation located in the southern end of Crescent Valley. Facilities and operations are located in both the eastern and western portions of the valley, with haulage and access roads linking both sides of the valley. Ancillary facilities include several infiltration basin galleries, some of which are located near the center of the valley. Attendant to the operations is a substantial private land position, along with numerous mining claims on public lands managed by the Bureau of Land Management. Part of our private land holding includes the 48,000 acre Dean Ranch, located in the center of the valley. The maps describing the Carlin rail corridor provided in the DEIS and those obtained at the December 9, 1999, public meeting in Crescent Valley depicts the corridor crossing portions of both the Dean Ranch and Cortez Gold Mines areas. Naturally, we are concerned about the impact that the rail corridor may have on our operations, land ownership, mining claims and future exploration.

Response
DOE is aware of the Cortez Gold Mines operation in Crescent Valley and has included a discussion of the mine area in Section 6.3.2.2.2 of the Final EIS. Table 8-1, Figure 8-5, and Sections 8.1 and 8.4 provide a discussion of the Cortez Gold Mines Pipeline Project and possible cumulative impacts.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

For any land that would be required, the Department would fairly compensate landowners under Federal acquisition procedures. DOE is required to use fair market value in the acquisition of real property. DOE must comply with the policies contained in the Uniform Relocation Assistance and Real Property Acquisition Policies Act, Title III, which includes the provision that the Agency (DOE) offer just compensation.

In other cases, as indicated in Section 9.3 of the EIS, mitigation measures would be developed where construction and operation of transportation facilities would result in (1) impacts to publicly used lands such as grazing allotments, (2) direct and indirect land loss, and (3) displacement of capital improvements.

8.11.1 (3166)
Comment - EIS001195 / 0004
As mentioned above, the [Carlin] corridor crosses a significant portion of our private lands and mining claims on public lands. Obviously, this raises several concerns related to right-of-way, access, land use, water rights, mining, exploration and agricultural activities such as grazing. We would expect DOE to work closely with us on resolving any conflicts that may arise in these areas.

Response
Section 6.3.2.2.2 of the EIS recognizes private and public land uses and lists the several Bureau of Land Management grazing allotments that could be affected, which includes 12 grazing areas, mining areas, and other land uses.

For any land that would be acquired, including mineral claims, landowners would be fairly compensated under Federal eminent domain procedures. When affected property was not acquired by eminent domain, mitigation measures would be evaluated and implemented as appropriate, as indicated in Section 9.3.1 of the EIS, when construction and operation of transportation facilities would result in (1) impacts to publicly used lands such as grazing allotments, (2) direct and indirect land loss, and (3) displacement of capital improvements.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and the Carlin Corridor selected, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

8.11.1 (3526)
Comment - EIS000721 / 0003
The 1,400 page Department of Energy's Impact Statement contains many sections that can be considered either inadequate or incomplete.

Land use and strategic plans that guide area development have not been considered in the DOE program. Some routes actually dissect large planned developments.

Response
Section 3.2.2.1.1 discusses the estimated current ownership or control of the land in each candidate rail corridor. Plans and documents that contain detailed land-use information are listed.

Land-use and ownership impacts are included in Section 6.3.2.2 of the EIS for each of the corridors.

Maps of potential land-use conflicts are presented in Section J.3.1.2.

8.11.1 (4306)
Comment - EIS001160 / 0116
Page 9-16: Not considered among the land use mitigation measures considered here is the need for additional 'safe havens' for operators of legal weight and heavy haul trucks along Nevada highways. Additional land areas, and resources, especially security resources will need to be allocated for provisions of safe havens along any and all designated routes.

Response
Legal-weight trucks would follow existing rights-of-way and hence no mitigation measures would be required for safe parking areas. As described in Section M.3.2.1.3 of the EIS, safe parking areas would be identified by the Regional Servicing Contractor and would include DOE facilities and specific designated areas such as U.S. Department of Defense facilities and rail sidings (with railroad concurrence)

Section 9.3.1 of the EIS states that mitigation would not necessarily be required if a heavy-haul truck route was selected, because these trucks would follow existing rights-of-way and would require little additional land disturbance for safe parking.

The security for the vehicles in the safe parking areas would be the same as the security used en route (see Section M.7 of the EIS).

8.11.1 (4465)
Comment - EIS001232 / 0009
Will mining claims be divided and access be restricted?

Will the free access of the residents be restricted across the valley (across the tracks)?

Response
A branch rail line could be constructed across a mining claim. However, access to claims would not be restricted with the exception of that portion where the actual roadbed was constructed. Access to either side of a valley traversed by a branch rail line would be possible. Sufficient crossing structures would be constructed to allow access from either side.

8.11.1 (5150)
Comment - EIS001444 / 0002
Impacts to Range
Two rail routes to Yucca Mountain go through our planning area. If either of these routes are selected we would have larger impacts during construction than after the railroad is finished.

Impacts from construction:
It may become difficult for livestock to gain access to areas and waters on the opposite side of the new construction. Cattle may avoid using areas with construction activity or temporary camps making it difficult to manage livestock or rotate use. This disruption might continue in an allotment for months. Construction would make more work for permittees. More cattle may be killed on the highway and along roads used during construction.

Impacts from the finished project:
There would be a small loss of AUMs [animal unit months] in large allotments that are unlikely to impact the operation. The loss of AUMs in small allotments may impact the permittee's operation.

The BLM [Bureau of Land Management] would request fencing along the railroad line. Drainage underpasses might allow cattle access to the opposite side of the railroad. These underpasses would need gates to allow access. When fenced, the railroad would block access to the opposite side of the track. This would cause problems in areas with few waters requiring water hauling. The track would divide allotment into pastures that could be used to rotate use allowing for new grazing management options. This would benefit livestock and vegetation management.

The Caliente route comes in from Lincoln County into Reveille, Stone Cabin, Ralston, Montezuma and Razorback allotments. The new route from Caliente, the Caliente Chalk Mountain Rail Corridor, will not cross our planning area.

Reveille allotment. Goes through south end of Railroad Valley up Reveille Valley across the Kawich near the Highway. This would split Reveille Valley into two pastures. This provides some good opportunities for some complete rest of the range in this valley and southern Railroad Valley. Dividing Reveille provides opportunities for improved grazing management. Livestock waters are well distributed in Reveille. Water hauling may not be necessary in Reveille. There would be a small loss of AUMs that would not likely affect the permittee's operation.

Stone Cabin allotment Colvin and Son. Goes southwest along the west side of the Kawich to the Test Site boundary into Ralston Allot. The potential rail corridor would split Tom Colvin's portion of the Stone Cabin Allotment into two separate pastures. This could be useful to us for management purposes. We could develop a three pasture rest-rotation with the two pastures in Stone Cabin and a third in the Ralston Allotment. The railroad corridor would have to be fenced off to keep Tom Colvin's cattle off the railroad tracks. New waters will also need to be developed and underpasses will need to be available for access into the other portions of the allotment. There would be a small loss of AUMs that would not likely affect the permittee's operation.

Ralston allotment Colvin and Son. Goes along the test site boundary into Montezuma allot. There are currently no permanent permits issued in the Ralston Allotment. The potential rail corridor runs through South Ralston along the test site boundary fence.

The BLM has issued a Temporary Nonrenewable Permit in South Ralston adjacent to the proposed track. The track will not cut off access to water and will not effect the AUMs permitted. The railroad corridor will need to be fenced through this area to keep cattle off the tracks.

Montezuma allotment. Follows the east side of the allotment until Scotty's Junction, crosses the highway and back to go around Scotty's Junction. Continues down the corridor to Razorback.

Razorback allotment. (Plate 12, C, D & E, 1 & 2) At this time the permittee in Razorback is taking nonuse and will not be affected by the railroad. If in the future the rancher activates his permit the railroad will cut through the private land in Oasis Valley cutting off Coffer's ranch from the rest of the allotment. Water is available at the ranch. The area east of the ranch does not have water. There is some water available north of Oasis Valley on the Test Site. If the railroad is fenced, drainage underpasses should allow cattle access to water. The rancher may need to provide water on the northeast side of the allotment. The railroad will also cut off approximately 16 sections in the southwest end of the allotment. This includes Bare mountain and Specie Spring. No water is available on the remaining 30 sections of valley south of Yucca Mountain, east of the railroad. Drainage underpasses will provide some access to specie spring. Cattle may tend to overuse the west side of the railroad. Water should be provided on the east side of the railroad to alleviate any overuse on the west side.

The Carlin route has 3 different routes in our area. It starts in Beowawe goes into Lander County and splits at Hickison Summit. One route goes through Monitor Valley the other through Smoky Valley.

The Smoky Valley route cuts through Smoky, San Antone, Monte Cristo and Montezuma allotments. It meets the Caliente route south of Tonopah.

The Monitor Valley route cuts through Monitor, Ralston, San Antone and Hunts Canyon. It meets the Smoky route either north of the San Antone Mountains or south of Tonopah.

Smoky allotment. The route cuts through the center of the valley not along the road. Near Round Mountain it crosses the highway into Francisco.

Francisco allotment. (Plate 4, A & B4) There are two possible routes in Francisco. The southern route will follow the highway fence in the south pasture opposite Round Mountain approximately 3 1/2 miles then turning southwest for 2 miles cutting approximately 640 acres off of the southeast corner of Francisco near the alfalfa field. The route has no benefit to the livestock operation. The rancher will loose a small amount of AUMs if the track does not cut through the winterfat flats. However it appears that the track will go through one of the winterfat flats. The rancher will need a reduction of permitted AUMS. This route does not appear to cut the rancher off from developed waters. It may cut access off to the winterfat in the 640 acres in the southeast corner if no underpasses are put in.

The northern route will cut the north pasture in half making a east and west half. It will also divide the south pasture into east and west sides (40% east and 60% west). When the corridor is fenced, Francisco will be a 4 pasture allotment. This will allow for new grazing management options. Drainage underpasses could be used to move cattle in and out of pastures. There are few developed waters on the west side. This might cause some difficulties for the permittee. They will need to haul water to new pastures. Some forage may be lost to the new railroad right of way but it may not significantly effect the livestock operation if the railroad does not run through the winterfat flats. If the railroad does there may need to be a reduction of AUMs for the permit.

San Antone allotment. The Smoky valley route enters San Antone just south of Francisco allotment and travels south to the Cypress Mine and south near the paved road to the highway. The Monitor Valley route enters San Antone from the east just above the Cypress Mine and then follow the Smoky route south.
Monte Cristo allotment. The railroad would only cut off the far eastern corner of this allotment near Tonopah. This does not impact the livestock operation in Monte Cristo.

Montezuma allotment. The Carlin route would cut through the far northeastern corner of the allotment. The route then meets the Caliente route north of Goldfield and follows that route to Yucca Mountain.

Monitor allotment. The Monitor Valley route travels down the middle of Monitor Valley to just east of Belmont. At this point there is no permit on this allotment. In the future if use is permitted on Monitor the railroad will cut the allotment in half making a east and west pasture. When fenced this will make Monitor into a two pasture allotment allowing for new grazing management options. Drainage underpasses could be used to move cattle in and out of pastures. There may be a need to haul water to the new pastures. Some forage may be lost to the new railroad right of way but it will not significantly effect any future permit.

Ralston allotment-Stone Cabin Partnership and Colvin and Son. The Monitor Valley route runs through Ralston allotment from Belmont to north of the San Antone Mountains. The southern route runs east of highway 376 to the Test Site near Mud Lake where it meets the Caliente route. This route would split the two smaller pastures into four pastures. The railroad corridor would possibly cut off part of the Thunder Mountain use area. If this occurs there would be access to the west side of the tracks through underpasses. There may need to be a small reduction in AUMs permitted in Thunder Mountain depending on the actual location of the tracks. Thunder Mountain is used on a temporary basis only. There is no permit in Ralston at this time.

Hunts Canyon allotment-Stone Cabin Partnership. The Monitor route runs south through the middle of Hunts Canyon allotment. This route will divide the Hunt's Canyon Allotment into east and west pastures. When fenced this will allow new grazing management options. Drainage underpasses could be used to move cattle in and out of pastures. There may be a need to haul water to the new pastures. Some forage may be lost to the new railroad right of way but it will not significantly effect any future permit if the tracks do not run through the winterfat flats in the center of the allotment. A reduction in AUMs may be necessary if winterfat is lost. This may affect the livestock operation. New grazing management in Hunts Canyon may alleviate the need for the temporary non-renewable permit outside the allotment by allowing periodic rests on Hunts Canyon. Water haul sites and access routes under the corridor would need to be established to make the pastures useable.

Razorback allotment. See the Caliente route.

The Caliente route appears to be less disruptive to livestock operations than the Carlin route. The Caliente route follows the Test Site boundary farther than the Carlin route can. Since the test Site boundary is already fenced and only one side of the railroad may need to be fenced. The portion of both routes which run through Montezuma, south of Stonewall, along the east of Highway 95, is in an area that is little used by livestock and may not require any fencing. The Caliente route would have less of an impact on range operations in our Field Station. There would be less impact if the train follows the test site boundary closely. Then only one fence would need to be built.

Response
Land-use and ownership impacts common to the construction and operation of all five of the branch rail lines are discussed in Section 6.3.2.1 of the EIS and impacts specific to the proposed Caliente route are discussed in Section 6.3.2.2.1. Land-use impacts specific to the Carlin route are discussed in Section 6.3.2.2.2. The EIS determines that a branch rail line could create a barrier to livestock movement, and quantitatively addresses the acres of grazing lands potentially affected by candidate rail corridors.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

If a corridor was selected for construction of a branch rail line, DOE would conduct field studies along the corridor that would identify specific land uses to be avoided. DOE would avoid land-use impacts and private land to the maximum possible extent. For example, access to grazing areas, forage, and water can be addressed in the early design phase of the rail corridor/alignment. This process would address Bureau of Land Management standard operating procedures for rights-of-way, construction and operation. Water wells would be required along the rail corridor in some areas for soil compaction and dust control during rail construction. It could be possible to improve grazing allotments if the Bureau permitted the use of this water for grazing. Grazing allotment access could be accomplished by designing at-grade structures to permit cattle to cross underneath the railbed.

8.11.1 (5154)
Comment - EIS001444 / 0007
The document does not identify what land use restrictions will be associated with the new 1/4 mile wide railroad. Will this restrict locatable/leasable minerals, surface occupancy, grazing, recreation, etc.?

The number of acres disturbed will be much greater than discussed in the document. A railroad grade and associated road will exceed the projections. This does not consider the number of acres that will be disturbed by construction and access.

Response
Land-use and ownership impacts common to the construction and operation of all five of the branch rail lines are discussed Section 6.3.2.1 of the EIS and impacts specific to each route are discussed in the appropriate subsections. Table 2-10 summarizes the amount of land that would be disturbed for each corridor. The EIS determines that a branch rail line could create a barrier to livestock movement, and quantitatively addresses the acres of grazing lands potentially affected by candidate rail corridors.

DOE acknowledges the recreational resources afforded by open space within parts of Nevada. In Section 6.3.2 of the EIS, DOE identifies potentially affected natural resource areas within each corridor. DOE would seek to minimize any restriction to or control over public lands used for recreational purposes and would develop specific mitigation measures to alleviate potential impediments to continued use of public lands.

For any land that would be acquired, including mineral claims, landowners would be fairly compensated under Federal eminent domain procedures. When affected property was not acquired by eminent domain, mitigation measures would be evaluated and implemented as appropriate, as indicated in Section 9.3.1 of the EIS, when

construction and operation of transportation facilities would result in (1) impacts to publicly used lands such as grazing allotments, (2) direct and indirect land loss, and (3) displacement of capital improvements.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

If a corridor was selected for construction of a branch rail line, DOE would conduct field studies along the corridor that would identify specific land uses to be avoided. DOE would avoid land-use impacts and private land to the maximum possible extent. Grazing allotment access could be accomplished by designing at-grade structures to permit cattle to cross underneath the railbed. It is possible that a branch rail line could be constructed across a mining claim. However, access to claims would not be restricted with the exception of that portion where the actual roadbed was constructed. Access to either side of a valley traversed by a rail branch line would be possible. Sufficient crossing structures would be constructed to allow access from either side.

8.11.1 (5160)
Comment - EIS001444 / 0013
The "Carlin" rail transportation corridor passes through Cortez Canyon and adjacent areas which have a high potential for containing valuable mineral deposits. The document indicates that no preferred transportation corridor has been selected and that if/when such specific routes are to be selected additional field surveys, resource analysis, consultation, and NEPA [National Environmental Policy Act] review will be initiated. Also, Appendix J indicates that one of the alternative routes associated with the "Carlin" corridor would circumvent the Cortez area. The document provides no detailed maps depicting the corridors and the potential for additional significant mineral development in the Cortez area is a real possibility and could pose a definite conflict with the proposed rail corridor.

There is no discussion of the Cortez Gold Mine in the discussion of the Carlin corridor.

Response
DOE is aware of the Cortez Gold Mines operation in Crescent Valley and has included a discussion of the mine area in Section 6.3.2.2.2 of the EIS. Table 8-1, Figure 8-5 (map), and Sections 8.1 and 8.4 provide a discussion of the Cortez Gold Mines Pipeline Project and possible cumulative impacts.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

For any land that would be required, the Department would fairly compensate landowners under Federal acquisition procedures. DOE is required to use fair market value in the acquisition of real property. DOE must comply with the policies contained in the Uniform Relocation Assistance and Real Property Acquisition Policies Act, Title III, which includes the provision that the Agency (DOE) offer just compensation.

In other cases, as indicated in Section 9.3 of the EIS, mitigation measures would be developed where construction and operation of transportation facilities would result in (1) impacts to publicly used lands such as grazing allotments, (2) direct and indirect land loss, and (3) displacement of capital improvements.

8.11.1 (5394)
Comment - EIS001887 / 0102
Page 2-47; Section 2.1.3.3.2 - Nevada Rail Scenario

DOE's rail corridor selection study is flawed. The first selection criteria used by DOE to select potential routes was land use compatibility. For this criteria, DOE selected corridors based upon using "land under public ownership, to the greatest extent possible, to minimize land-use conflicts." Favorable topography was used as a selection criteria only within "areas not excluded because of land-use conflicts" (Nevada Potential Repository Preliminary Transportation Strategy, Study 1, April 1995, page 25).

There are serious problems with this approach. Land ownership does not accurately reflect land-use. Most western ranching operations are based upon a combination of privately owned fee land and grazing leases on publicly owned lands. In many, if not all cases, the ranching unit depends on these grazing leases to be economically viable. Most grazing leases are held by the ranches that can access the lease as a logical part of their operation. Splitting an existing operation with a rail line that will limit access to the leased land can have significant adverse effects on the operation of the ranch. Using the avoidance of privately owned land as the corridor selection process without regard to the existing ranching operations' use of private and public lands may very well result in greater impact on an operation than using private land.

Most of the private land in western States with high percentages of federally owned land is land with gentle topography. Early settlers selected the flatter land for their own. The land with rugged topography was not settled and remained in public ownership. This shift to rugged terrain to avoid private land is a dominant factor in most of the routes selected for further study in the 1990 Preliminary Rail Access Study, as reflected by the following: "An option was selected from the Caliente area in order to avoid land use impacts encountered in most of the southern areas of Nevada.... The base route has the most favorable land-use compatibility, but would incur significant costs due to the complex engineering and construction required to traverse rough terrain" (page 17). "However, the checkerboard pattern of private and public land ownership surrounding the railroads across northern Nevada makes the complete avoidance of private land difficult. The minimum impact departure point is a location about 5 miles west of Carlin. The terrain in this area is so rugged that private developers were uninterested in the land, and as a result, the greater portions of the terrain were left in BLM [Bureau of Land Management] ownership" (page 21).

By using land ownership for the first selection criteria, DOE's selection process actually favored more rugged terrain where construction of the proposed rail line is more difficult. This creates many additional land-use impacts due to the extensive cuts and fills required by unfavorable topography. These cuts and fills will further exacerbate the problem faced by ranchers in moving livestock and equipment across the rail line.

Response
Sections 2.1.3.3 and 2.3.3 of the EIS describe the methods used to select and describe the proposed alternative routes and modes for transportation in Nevada. Section 6.3 describes the potential impacts for these routes and modes.

DOE's objective, with respect to rail corridors, was to identify reasonable and representative 400-meter (0.25-mile)-wide corridors that would produce the least environmental and stakeholder impact based on published environmental and land-use data. Another consideration was to evaluate corridors that are cost-effective (for example, balancing cut and fill to the extent possible).

In its assessment of potential land-use impacts, DOE considered the differences between land-use types, land disturbances, land ownership, and the creation of barriers. The assessment compared proposed use of land for Yucca Mountain transportation purposes to existing or other proposed land uses to estimate the magnitude and context of potential conflicts. If an action would result in continuing a current land use either due to little or no impact or through mitigation, the effects were considered insignificant or small. For example, as discussed in Chapter 6, the impacts to livestock and Bureau of Land Management grazing allotments could be mitigated through the use of fencing, overpasses, and underpasses, which could provide a water source to animals cut off from current sources. By providing these mitigating measures, the impacts would be lessened and considered small. If an action could result in departures from existing uses, and mitigation could not remedy the conflict, the effects could be more substantial.

Factors considered included the uniqueness of a geographic area; presence of historic, scientific, and cultural resources; potential effects on endangered species; and compliance with Federal, State, or local law. Based on information available, potential land-use impacts associated with Yucca Mountain transportation activities could be minimized through judicious alignment of the branch rail line or through mitigation. Overall, the land-use impacts would not be substantial due to the use of various optional and alternate routes within the corridor, mitigation measures, and the judicious routing of the branch rail line within the corridor.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

8.11.1 (5396)
Comment - EIS001887 / 0104
Page 2-47, Section 2.1.3.3.2

Roadless areas are also more likely to be found in rugged terrain. Virtually all potential wilderness areas are located on public lands. The selection criteria that avoids private lands results in more potential impact to roadless areas and potential wilderness areas.

Response
Sections 6.3.2.1 and 6.3.2.2 of the EIS discuss the common impacts that could be caused by the construction and operation of branch rail lines in Nevada and the specific impacts that would occur for specific branch rail line alternatives, respectively. Although the candidate rail corridors pass through some roadless areas, Tables J-41 through J-45 list the variations for each of the corridors and describe potential conflicts, including those for wilderness study areas. For example, Table J-45 lists the two wilderness study areas involved in the Valley Modified Corridor as recommended by the Bureau of Land Management as "not recommended for Wilderness" designation.

In some instances, mountainous terrain could not be avoided with candidate corridors due to the fact that the majority of the mountains in Nevada are oriented in a north-south direction. Whenever possible, mountainous terrain was avoided for construction or operational purposes (speed and maintenance) and cost-effectiveness.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

8.11.1 (5489)
Comment - EIS001660 / 0024
The DEIS fails to analyze impacts of the proposed action on agriculture in Nevada. Some residents of Mineral County depend on agriculture for their livelihoods. The BLM [Bureau of Land Management] administers numerous grazing allotments that are leased to Mineral County ranchers. The DEIS must disclose the impacts upon Mineral County agriculture of: (1) construction and operation of access roads and railroads, (2) introduction and spread of noxious weeds, (3) increased risk of wildfire, and (4) increased risk to animals. The DEIS must address both the short-term construction impacts and the longer-term impacts upon the range.

Response
DOE does not expect any direct impacts to Mineral County because none of the candidate rail corridors, legal-weight truck routes, or heavy-haul truck routes pass through the County (see Figures 6-13, 6-14, and 6-20). The closest branch rail line would be the Carlin Corridor, which lies to the east in Nye County.

Similarly, because DOE does not anticipate that transportation or Yucca Mountain Repository workers would reside in Mineral County, it does not believe there would be discernible influences on the county's land-use and community development.

8.11.1 (5511)
Comment - EIS001660 / 0030
The DEIS fails to adequately address the impacts of the proposed action on land use and community development in Mineral County. Mineral County (MC) will be promoting tourism. One area for tourism is hiking and outdoor activities.

Another consideration for MC's land would be to have a private prison in an area close to one of the possible routes. Issues of concern to Mineral County residents include: (1) the protection of private property rights and value of land assets; (2) the fiscal, agricultural, and groundwater impacts from parcelization of land; and (3) the need to acquire land from the BLM [Bureau of Land Management] for community expansion, to increase the amount of private land, and to erase restrictions on the use of federal lands. The DEIS fails to describe impacts on Mineral County's land use and community development, and does not evaluate whether the proposed action conflicts with its policies. The DEIS does not adequately address the potential effects that this project could have on property values within Mineral County. Since agriculture is one of Mineral County's economic producers, the nuclear stigma could affect not only property values, but also crop prices. Such stigma could stymie Mineral County's efforts to diversify the local economy, retain existing businesses, and attract new businesses to the county. The DOE seems to assume that land uses of rural communities are not significant, while land uses by federal agencies are. The DEIS must disclose and evaluate: (1) the DOE's planned use of eminent domain to take private land for transportation routes and rail corridors; (2) the effect of the proposed action on private property values, including the perceived risk and stigmatization and the effects of improved or restricted access to private property; and (3) the potential growth-effects of the proposed action, and whether it would result in additional parcelization of private land.

Response
DOE does not expect any direct impacts to Mineral County because none of the candidate rail corridors, legal-weight truck routes, or heavy-haul truck routes pass through the County (see Figures 6-13, 6-14, and 6-20). The closest branch rail line would be the Carlin Corridor, which lies to the east in Nye County.

Similarly, because DOE does not anticipate that transportation or Yucca Mountain Repository workers would reside in Mineral County, it does not believe there would be discernible influences on the county's land-use and community development.

8.11.1 (5569)
Comment - EIS001887 / 0196
Page 3-100; Section 3.2.2.1.1 - Land Use and Ownership

The definition of region of influence for land use is too narrow. Impacts to land use may occur that do not result in a change of ownership or use. For example, bisecting a ranch with a rail line will have substantial impacts on that operation. It will be difficult for the rancher to move equipment and livestock from one side of the rail line to the other. Because of the difficulty in operating the ranch that is now split into two pieces, the value of the ranch will be reduced. This will have significant impact on the rancher without changing the ownership or the use of the land. The region of influence for land use should include all of the land under the ownership or lease of agricultural operations that will be crossed. (Note: this same discussion applies to the intermodal transfer station and heavy-haul routes.)

Response
Section 3.2.2.1.1 of the EIS does state that area disturbed and change in land ownership were criteria used in evaluating land use. However, Section 3.2.2 describes in more detail the information and data collected about the

alternative transportation routes in Nevada. The Department's objective, with respect to rail corridors, was to identify reasonable and representative 400-meter (0.25-mile)-wide corridors that would produce the least environmental and stakeholder impact based on published environmental and land-use data. Another consideration was to evaluate corridors that are cost-effective (for example, balancing cut and fill to the extent possible).

In its assessment of potential land-use impacts, DOE considered the differences between land-use types, land disturbances, land ownership, and the creation of barriers. The assessment compared proposed use of land for Yucca Mountain transportation purposes to existing or other proposed land uses to estimate the magnitude and context of potential conflicts. If an action would result in continuing a current land use either due to little or no impact or through mitigation, the effects were considered insignificant or small. For example, as discussed in Chapter 6, the impacts to livestock and Bureau of Land Management grazing allotments could be mitigated through the use of fencing, overpasses, and underpasses, which could provide a water source to animals cut off from current sources. By providing these mitigating measures, the impacts would be lessened and considered small. If an action could result in departures from existing uses, and mitigation could not remedy the conflict, the effects could be more substantial.

DOE is aware that a rail corridor would have impacts to ranching, recreational uses, and other activities and has described those potential impacts for the alternative rail corridors for legal-weight trucks in Section 6.3.2 of the EIS and 6.3.3 for heavy-haul trucks.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

8.11.1 (5693)
Comment - EIS001887 / 0308
Page 6-8 to 6-9; Section 6.1.2.1 - Land Use

DOE has not accurately identified or assessed the land use impacts of the Nevada transportation alternatives. Even where DOE has identified land use impacts, DOE has understated the nature and severity of the impacts. The failure by DOE to accurately describe the Proposed Action also prevents an adequate assessment of land use impacts. For example, the land use impacts associated with the development of ballast and sub-ballast quarries, solid waste disposal facilities, construction lay-down areas, and construction staging areas cannot be assessed until these areas are identified.

The conclusions regarding land use impacts in the Draft EIS rely primarily on disturbed acreage. Although this is one measure of land use impacts, it is not the only one. For linear facilities such as a branch rail line, an assessment of land use impacts should also include an evaluation of the impacts of bisecting current and future land uses. As discussed above in the comment on Section 2.1.3.3.2, Nevada Rail Scenario, splitting an area with a branch rail line can have significant impacts on the entire area, not just the area within the right-of- way. This is particularly true for ranching operations. DOE has not assessed this type of land use impact in the Draft EIS.

DOE has identified a number of land use conflicts with the proposed rail line, but has not accurately characterized the impact of these conflicts. For example, potential rail corridors cross the Simpson Park Habitat Management Area (Carlin), the Old Spanish Trail/Mormon Road special recreation management area (Jean), Wilderness Study Areas (Valley Modified), and the Desert National Wildlife Range (Valley Modified). A rail line through these special land use areas would have significant impact on the purpose of these special areas. The EIS does not even discuss these impacts. It is particularly difficult to understand why DOE has not eliminated the Caliente Chalk Mountain alternative. The U.S. Air Force has unequivocally stated that this alternative is unacceptable due to its impacts on the Nellis Air Force Range.

Proposed rail line corridors also cross areas of potential future community growth. Although DOE identifies these areas, the Draft EIS does not contain an assessment of the impacts of this conflict on future community growth patterns. The area of particular concern is the impact of the proposed Valley Modified route on growth in the north Las Vegas urban area.

Many of the areas crossed by potential rail corridors are currently remote, undeveloped areas. Much of the area is currently roadless, including Wilderness Study Areas. Regardless of the decision by the land management agency regarding classification as wilderness, construction of a rail line through a remote, roadless area will have land use impacts. These changes in land use should be identified and assessed.

From a land use perspective, the only rail alternative that does not have serious land use conflicts is the Caliente corridor. Even this corridor could impact the Nellis Air Force Range. All other rail alternatives cross or impact areas designated as special purpose land use. These conflicts are summarized below:

[Please see document image file to view table.]

DOE lists the Caliente/Chalk Mountain corridor as a non-preferred alternative, based upon the Air Force's statement that no route that traverses Nellis Air Force Range is acceptable. Based upon this comment, the route (and the associated heavy-haul route) should have been eliminated from the alternatives included in the Draft EIS and listed in Section 2.3 as an alternative considered but eliminated from detailed study.

Response

Sections 6.3.2.1 and 6.3.2.2 of the EIS address the potential common and specific impacts of Nevada rail implementing alternatives, respectively, including land-use impacts. In an effort to provide decisionmakers and stakeholders with the information needed to make a rail or heavy-haul truck transportation decision for Nevada, regions of influence were developed and the level of information needed within those regions defined.
In its assessment of potential land-use impacts, DOE considered the differences between land-use types, land disturbances, land ownership, and the creation of barriers. The assessment compared proposed use of land for Yucca Mountain transportation purposes to existing or other proposed land uses to estimate the magnitude and context of potential conflicts. If an action would result in continuing a current land use either due to little or no impact or through mitigation, the effects were considered insignificant or small. For example, as discussed in Section 6.3.2.1, the EIS determines that a branch rail line could create a barrier to livestock movement, and quantitatively addresses the acres of grazing lands potentially affected by rail corridors. However, the impacts to livestock and Bureau of Land Management grazing allotments could be mitigated through the use of fencing, overpasses, and underpasses, which could provide a water source to animals cut off from current sources. By providing these mitigating measures, the impacts would be lessened and considered small. If an action could result in departures from existing uses, and mitigation could not remedy the conflict, the effects could be more substantial. Factors considered when assessing impacts included the uniqueness of a geographic area; presence of historic, scientific, and cultural resources; potential effects on endangered species; and compliance with Federal, State, or local law.

As described in the introduction to Chapter 6, in response to interest and suggestions by the public and to better describe potential impacts of transportation alternatives in Nevada, DOE modified analyses and presentations of impacts in the EIS. For example, additional details, when available, and evaluations are included for wilderness study areas, grazing allotments, sensitive biological resources, management areas, cultural resources, and hydrologic resources.

Section 6.3.2.2.5 of the EIS describes the impacts from construction and operation of the Valley Modified Corridor Implementing Alternative. The land-use discussion has been expanded and discusses the relationship of the Sheep Mountain Alternate and the Wilderness Study Areas raised by the commenter. In addition, a new subsection has been added to Section J.3.1.2 that presents potential land-use conflicts. Figure J-20 shows the Quail Springs Wilderness Study Area and the Nellis A, B, and C Wilderness Study Areas in relation to the Valley Modified Corridor.

In comments on the Draft EIS, the Air Force restated its position that routes across the Nevada Test and Training Range would not be consistent with its national security uses. The Air Force concluded that use of such a corridor

or route could adversely affect critical and sensitive national security activities. In response, DOE reevaluated whether the Caliente-Chalk Mountain Corridor and Caliente/Chalk Mountain heavy-haul truck route should be eliminated from further evaluation. DOE met with the Air Force (see Appendix C of the EIS), considered the information they provided, and concluded that the Caliente-Chalk Mountain Corridor and Caliente/Chalk Mountain heavy-haul truck route implementing alternatives should remain identified as "nonpreferred alternatives" in this Final EIS.

DOE believes, however, that the EIS adequately analyzes the environmental impacts that could result from the Proposed Action. In addition, the EIS provides the environmental impact information necessary to make certain broad transportation-related decisions, namely the choice of a national mode of transportation outside Nevada (mostly rail or mostly legal-weight truck), the choice among alternative transportation modes in Nevada (mostly rail, mostly legal-weight truck, or heavy-haul truck with use of an associated intermodal transfer station), and the choice among alternative rail corridors or heavy-haul truck routes with use of an associated intermodal transfer station in Nevada.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

8.11.1 (5729)
Comment - EIS001887 / 0335
Page 6-43; Section 6.3.2.1 - Impacts Common to Nevada Branch Rail Line Implementing Alternatives
Land Use and Ownership: The Draft EIS fails to adequately evaluate potential land use impacts for the various rail spur alternatives. Table 1 below shows the land use conflicts that should have been fully studied:

[Please see document image file to view table.]

Response
Section 6.3.2.1 of the EIS describes the impacts common to the five branch rail line implementing alternatives. As discussed in Section 2.3.3.1, DOE chose candidate rail corridors in Nevada to maximize the use of Federal lands (with the exception of lands controlled by the Air Force), provide access to regional rail carriers, and minimize, to the extent possible, obvious land-use conflicts. As discussed in Section 6.3.2.2, all of the candidate branch rail lines would require the use of mostly Federal land and very little private land. For example, the Caliente and Valley Modified Corridors would require the use of almost no private land (less than 1 percent). The Carlin and Jean Corridors would require only 7 and 5 percent private land, respectively.

In its assessment of potential land-use impacts, DOE considered the differences between land-use types, land disturbances, land ownership, and the creation of barriers. The assessment compared proposed use of land for Yucca Mountain transportation purposes to existing or other proposed land uses to estimate the magnitude and context of potential conflicts. If an action would result in continuing a current land use either due to little or no impact or through mitigation, the effects were considered insignificant or small. For example, as discussed in Chapter 6, the impacts to livestock and Bureau of Land Management grazing allotments could be mitigated through the use of fencing, overpasses, and underpasses, which could provide a water source to animals cut off from current sources. By providing these mitigating measures, the impacts would be lessened and are considered small.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

8.11.1 (5760)
Comment - EIS001887 / 0363
Page 10-6; Section 10.1.2.1 - Land Use

The Draft EIS assumes that 0.04 square kilometers could be needed to construct a bypass near Beatty. The Draft EIS ignores the fact that at least two other locations will also require bypasses - Tonopah and Goldfield.

Response
As indicated in Section 6.3 of the EIS, DOE believes a new section of road would be required near Beatty, Nevada, to accommodate potential heavy-haul truck traffic. The road would be required because of the severity of road turns in the existing roadway. Based on the engineering studies that DOE has conducted, however, DOE does not believe new sections of road or bypasses would be required in Tonopah and Goldfield. The existing roadways could be sufficiently upgraded to accommodate the heavy-haul truck traffic.

8.11.1 (5989)
Comment - EIS001879 / 0014
Not only does the Draft EIS underestimate the radiological risk of routine transportation through rural communities along US-95, it also provides an incomplete assessment of the potential effects of routine transportation of highly radioactive wastes through these communities over a 30-40 year period. Specifically, the Draft EIS does not address the potential effects of such transport on the value of commercial and residential properties along the transportation routes, or the potential effects on visitors and travelers to patronize lodging along the transportation routes. The EIS must address the potential impacts of this lost socioeconomic opportunity.

Response
Based on the results of the impact analyses presented in Chapter 6 and Appendix J of the EIS, as well as the results published in numerous other studies and environmental impact analyses cited in the EIS, DOE is confident that spent nuclear fuel and high-level radioactive waste can be and would be safely transported to Yucca Mountain. DOE believes, as the EIS reports, that the potential impacts of this transportation would be so low for individuals who live and work along the routes that these individual impacts would not be discernible even if the corresponding doses could be measured. The analysis presented in the EIS factored in the characteristics of spent nuclear fuel and high-level radioactive waste, the integrity of shipping casks that would be used in transport, and the regulatory and programmatic controls that would be imposed on shipping operations (see Appendix M). The EIS analytical results are supported by numerous technical and scientific studies which have been compiled through decades of research and development by DOE and other Federal agencies of the United States, including the Nuclear Regulatory Commission and the U.S. Department of Transportation, as well as by the international community, including the International Atomic Energy Agency.

Regarding the potential for economic impacts along routes that shipments would use, DOE examined relevant studies and literature on perceived risk and stigmatization of communities to determine whether the state-of-the-science in predicting future behavior based on perceptions had advanced sufficiently to allow DOE to quantify the impact of public risk perception on economic development or property values in potentially affected communities (see Section 2.5.4 and Appendix N of the EIS). Of particular interest were those scientific and social studies carried out in the past few years that directly relate to either Yucca Mountain or to DOE actions such as the transportation of foreign research reactor spent nuclear fuel. DOE reevaluated the conclusions of previous literature reviews such as those conducted by the Nuclear Waste Technical Review Board and the State of Nevada, among others. DOE has concluded that:

- While in some instances risk perceptions could result in adverse impacts on portions of a local economy, there are no reliable methods whereby such impacts could be predicted with any degree of certainty
- Much of the uncertainty is irreducible, and
- Based on a qualitative analysis, adverse impacts from perceptions of risk would be unlikely or relatively small.

While stigmatization of southern Nevada can be envisioned under some scenarios, it is not inevitable or numerically predictable. Any such stigmatization would likely be an aftereffect of unpredictable future events, such as accidents,

which would not be expected to occur. As a consequence, DOE addressed but did not attempt to quantify any potential for impacts from risk perceptions or stigma in this Final EIS.

8.11.1 (6645)
Comment - EIS001878 / 0034
The land use descriptions for the rail corridors in Nevada are inadequate. (p. 3-101 to -103) The land use regions of influence are narrowly drawn (limited only to disturbed lands and changes in ownership), and the only information provided for the Carlin corridor (for example) is the amount of public and private land. Although the DEIS says that "detailed information on land use is available" in other documents, it fails to describe their contents even briefly, as required by 40 CFR 1502.21. According to testimony before the DOE at the Crescent Valley public hearing on December 9, 1999, the description in the DEIS of existing land uses is inadequate and inaccurate. On page 6-61, the DEIS names two towns, Gold Acres and Tenabo, that are not presently inhabited, witnesses said.

Response
Section 3.2.2.1 of the EIS provides the baseline environmental information for assessing the potential impacts of implementing Nevada rail implementing alternatives. The more notable land-use features and potential influences that exist or could exist on lands within the corridors are presented in Chapter 6. For example, the land features within the Carlin Corridor are presented in Section 6.3.2.2.2.

The listing of communities in Section 6.3.2.2.2 of the EIS served two purposes: (1) to identify potentially affected communities, and (2) as map references points. Gold Acres and Tenabo are historic reference points in the vicinity of the Carlin Corridor.

In its assessment of potential land-use impacts, DOE considered the differences between land-use types, land disturbances, land ownership, and the creation of barriers. The assessment compared proposed use of land for Yucca Mountain transportation purposes to existing or other proposed land uses to estimate the magnitude and context of potential conflicts. If an action would result in continuing a current land use either due to little or no impact or through mitigation, the effects were considered insignificant or small. For example, as discussed in Chapter 6, the impacts to livestock and Bureau of Land Management grazing allotments could be mitigated through the use of fencing, overpasses, and underpasses, which could provide a water source to animals cut off from current sources. By providing these mitigating measures, the impacts would be lessened and considered small. If an action could result in departures from existing uses, and mitigation could not remedy the conflict, the effects could be more substantial. Factors considered included the uniqueness of a geographic area; presence of historic, scientific, and cultural resources; potential effects on endangered species; and compliance with Federal, State, or local law.

As described in the introduction to Chapter 6, in response to interest and suggestions by the public and to better describe potential impacts of transportation alternatives in Nevada, DOE modified analyses and presentations of impacts in the EIS. For example, additional details, when available, and evaluations are included for wilderness study areas, grazing allotments, sensitive biological resources, management areas, cultural resources, and hydrologic resources.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

8.11.1 (6679)
Comment - EIS001878 / 0051
The DEIS fails to analyze impacts of the proposed action on agriculture in Nevada and specifically Eureka County. Many residents of Eureka County depend on agriculture for their livelihoods. The BLM [Bureau of Land Management] and the U.S. Forest Service administer numerous grazing allotments that are leased to ranchers in Eureka County and neighboring counties. The DEIS says that the Carlin corridor would cross 12 allotments, that

construction of the rail line would require "conversion of land" within those allotments, but that "functionality" would not be affected. (p. 6-61) These statements are vague and unsupported by any evidence.

The DEIS must disclose the impacts upon Eureka County agriculture of: (1) conversion of water rights or agricultural land to other uses, (2) fragmentation of range or grazing allotments, (3) damage to forage from land disturbance, introduction of weeds, increased wildfire, or other factors, (4) restrictions on livestock movement, (5) loss of water supplies, or restricted access to water supplies, (6) loss of livestock hit by trains or other motor vehicles, and the associated public safety implications, (7) changes in value of agricultural lands or permits, (8) changes in the costs of agricultural production, and (9) increases in harassment of livestock. The impact analysis must address both construction and operation of fences, water wells, the railroad bed and tracks, and access roads along and perpendicular to the tracks. The DEIS must also disclose whether fragmentation of grazing allotments or changes in values of agricultural lands and associated appurtenances would be a taking of private property rights requiring compensation under the Constitution of the United States.

Regarding fences, testimony at the public hearing before the DOE at Crescent Valley on December 9, 1999, indicated that numerous railroad right-of-way fences were destroyed during recent range fires in Eureka County and neighboring counties, and that requests by the Board of Eureka County Commissioners to the railroads to repair the fences have not been filled. Thus, the DEIS must disclose how fences will be maintained, as well as the possible impacts on agriculture from poorly maintained right-of-way fences.

Response
Section 6.3.2.2.2 of the EIS discusses the potential impacts specific to the Carlin Corridor. For example, the land-use section lists the 12 grazing allotments that the corridor crosses. The EIS determines that a rail line could create a barrier to livestock movement, and quantitatively addresses the acres of grazing lands potentially affected by candidate rail corridors.

If the Carlin Corridor was selected for construction of a branch rail line, DOE would conduct field studies along the corridor that would identify specific land uses to be avoided. DOE would avoid land-use impacts and private land to the maximum possible extent. For example, access to grazing areas, forage, and water could be addressed in the early design phase of the rail corridor/alignment. This process would address Bureau of Land Management's standard operating procedures for rights-of-way, construction and operation. Water wells would be required along the rail corridor in some areas for soil compaction and dust control during rail construction. It could be possible to improve grazing allotments if the Bureau permitted the use of this water for grazing. Grazing allotment access can be accomplished by designing at-grade structures to permit cattle to cross underneath the railbed. DOE would be responsible for track maintenance, including fencing.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

8.11.1 (6691)
Comment - EIS001878 / 0060
The DEIS fails to adequately address the impacts of the proposed action on land use and community development in Eureka County. (pp. 6-36, -43, -44, -60) Impacts on land use would extend far beyond a 60-meter construction zone or a 400-meter corridor with construction camps. (p. 6-44) Almost 60 percent of the assessed private parcels of land in Eureka County are within 10 miles of the Carlin rail corridor, which would affect 1,730 acres of private land along its length. (p. 6-7) (See Exhibit G.) County residents also use public lands for mining, agriculture, and other

uses. Eureka County's Master Plan (January 1997) and its Land Use Element (July 1998) identify land use issues of concern to county residents, including (among others):

- The protection of private property rights and the value of land assets;
- The fiscal, agricultural, and groundwater impacts from parcelization of land; and
- The need to acquire land from the BLM [Bureau of Land Management] for community expansion, to increase the amount of private land, and to ease restrictions on the use of federal lands.

The goals and policies of the Land Use Element:

- Discourage federal actions that threaten to impair the use or value of private property rights;
- Encourage the transfer of public land to private ownership; and discourage transfer of private land to public ownership.

The DEIS fails to describe the Eureka County Master Plan and its land use element, and fails to evaluate whether the proposed action conflicts with its policies. The DOE appears to assume that land uses of rural residents are not significant, while land uses by federal agencies are. The DEIS must disclose and evaluate: (1) the DOE's planned use, if any, of eminent domain to take private land for the rail corridor, (2) the effect of the proposed action on private property values, including the effects of perceived risk and stigmatization and the effects of improved or restricted access to private property, and (3) the potential growth-inducing effects of the proposed action, and whether it would result in additional parcelization of private land. The DEIS must also disclose whether changes in values of private lands affected by a rail corridor would be a taking of private property rights requiring compensation under the Constitution of the United States.

Response

DOE believes that the EIS adequately analyzes the environmental impacts that could result from the Proposed Action. In addition, the EIS provides the environmental impact information necessary to make certain broad transportation-related decisions, namely the choice of a national mode of transportation outside Nevada (mostly rail or mostly legal-weight truck), the choice among alternative transportation modes in Nevada (mostly rail, mostly legal-weight truck, or heavy-haul truck with use of an associated intermodal transfer station), and the choice among alternative rail corridors or heavy-haul truck routes with use of an associated intermodal transfer station in Nevada.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative and the Carlin Corridor be selected, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

Specifically, Section 6.3.2.2 of the EIS notes that the branch rail lines would require conversion of land within existing grazing allotments. DOE expects the potential impacts of construction to have a greater effect upon grazing lands than would operations. During the construction phase, it could be difficult for cattle to access water if the construction zone divided the grazing allotment. Construction activity and temporary camps with the presence of construction crews could result in disrupting ranch operations and livestock rotations. There is a possibility that some livestock could be killed along roads used during construction.

DOE, however, expects that after construction, operational impacts would be less even though the branch rail lines could divide some grazing lands. Input received by DOE from the Bureau of Land Management indicates that dividing grazing lands would result in a small loss of animal unit months in large allotments but would be unlikely to affect ranch operations. The loss of animal unit months in small allotments could affect the grazing permittee's operation. The Bureau also indicated that if a branch rail line divided an allotment into separate pastures, such

pastures could provide an opportunity to rotate grazing area use, allowing for new grazing management options. This opportunity could benefit livestock and vegetation management.

If the Carlin Corridor was selected for construction of a branch rail line, DOE would conduct field studies along the corridor that would identify specific land uses to be avoided. DOE would avoid land-use impacts and private land to the maximum possible extent. For example, access to grazing areas, forage, and water could be addressed in the early design phase of the rail corridor/alignment. This process would address Bureau of Land Management standard operating procedures for rights-of-way, construction and operation. Water wells would be required along the rail corridor in some areas for soil compaction and dust control during rail construction. As indicated in Section 9.3.1 of the EIS, DOE would evaluate appropriate mitigation actions that specifically address access to publicly owned lands, including grazing permits and leases. These actions could include providing access to lands on both sides of a branch rail line with underpasses and assisting in providing water should there be a need. It could be possible to improve grazing allotments if the Bureau permitted the use of this water for grazing.

Regarding private property along the rail corridor, DOE is required to use fair market value in the acquisition of real property. DOE must comply with the policies contained in the Uniform Relocation Assistance and Real Property Acquisition Policies Act, Title III, which includes the provision that the Agency (DOE) offer just compensation.

In light of the comments received on the Draft EIS concerning perceived risk, DOE examined relevant studies and literature on perceived risk and stigmatization of communities to determine whether the state-of-the-science in predicting future behavior based on perceptions had advanced sufficiently since scoping to allow DOE to quantify the impact of public risk perception on economic development or property values in potentially affected communities (see Section 2.5.4 and Appendix N of the EIS). Of particular interest were those scientific and social studies carried out in the past few years that directly relate to either Yucca Mountain or to DOE actions such as the transportation of foreign research reactor spent nuclear fuel. DOE reevaluated the conclusions of previous literature reviews such as those conducted by the Nuclear Waste Technical Review Board and the State of Nevada, among others. DOE has concluded that:

- While in some instances risk perceptions could result in adverse impacts on portions of a local economy, there are no reliable methods whereby such impacts could be predicted with any degree of certainty

- Much of the uncertainty is irreducible, and

- Based on a qualitative analysis, adverse impacts from perceptions of risk would be unlikely or relatively small.

While stigmatization of southern Nevada can be envisioned under some scenarios, it is not inevitable or numerically predictable. Any such stigmatization would likely be an aftereffect of unpredictable future events, such as accidents, which would not be expected to occur. As a consequence, DOE addressed but did not attempt to quantify any potential for impacts from risk perceptions or stigma in this Final EIS.

8.11.1 (6702)
Comment - EIS001878 / 0068
The DEIS fails to address the impacts of the proposed action on recreation in Eureka County and neighboring counties. Residents of Eureka County, as well as residents of other parts of Nevada and other states, rely on open spaces within the county for its unique recreation opportunities, including camping, hunting, fishing, nature study, history study, back country travel, horse pack trips, and sightseeing. Eureka County and its neighboring counties include large unspoiled areas that could be affected, directly or indirectly, by the proposed action.

The DEIS must analyze the anticipated impacts of the proposed action on recreation. Specifically, the DEIS must consider the impacts of: (1) constructing and operating a raised railroad bed and access road through back country areas and hunting ranges, (2) constructing and operating roads connecting the rail corridor to resources such as borrow pits, (3) constructing fences, (4) restricting or improving access to the back country, (5) direct and indirect damage to recreational, historical, and natural resources, and (6) direct and indirect impacts on fish and game.

The DEIS says, "Each corridor has areas the public uses and areas available for sale and transfer. As a consequence, the rail line could result in limited access to areas currently in use by the public." (p. 6-44) Does this mean that areas traditionally available for outdoor recreation, including hunting and fishing, will be off limits? Does it mean that a person would need permission from the DOE or the rail operator to have access to such areas?

Response
DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative and the Carlin Corridor be selected, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

DOE acknowledges the recreational resources afforded by open space within parts of Nevada. In Section 6.3.2 of the EIS, DOE identifies potentially affected natural resource areas within each rail corridor. DOE would seek to minimize any restriction to or control over public lands used for recreational purposes and would develop specific mitigation measures to alleviate potential impediments to continued use of public lands.

A branch rail line could be constructed across a trail or road access. However, access would not be restricted with the exception of that portion where the actual roadbed was constructed. Access to either side of a valley traversed by a rail branch line would be possible. Sufficient crossing structures would be constructed to allow access from either side.

8.11.1 (6986)
Comment - EIS002068 / 0003
One question I have is what happens to the mineral and Steam rights etc? Personally I think the Mineral etc rights should still belong to the owners of the land at the time of the Sale to the Gov.

Response
Sections 6.3.1, 6.3.2, and 6.3.3 of the EIS address the potential impacts of Nevada legal-weight truck, heavy-haul truck, and branch rail line implementing alternatives, respectively, including land-use impacts. These sections recognize and describe the impacts related to rights-of-way acquisition for branch rail lines and developing or upgrading highways. The Department is interested in acquisition of rights-of-way or land withdrawal from public and private land only for constructing and operating a branch rail line or expanding existing roads for heavy-haul trucks. The acquisition of mineral or steam rights would not be sought.

8.11.1 (7150)
Comment - EIS001337 / 0047
The County [Lincoln] and City [Caliente] urged DOE to assess rail construction related losses in forage for livestock grazing. While the DEIS recognizes that some forage might be lost and that livestock movements might be impeded, no estimate of lost animal unit months (AUM's) of forage is provided within the DEIS.

Response
Because definitive information is not available on specific tracts of land that could be required in a given transportation alternative, DOE did not quantify potential impacts to animal unit months. Input received from the Bureau of Land Management, however, indicated that dividing grazing lands would result in a small loss of animal unit months in large allotments but would be unlikely to affect ranch operations. The loss of animal unit months in small allotments could affect a permittee's operation. The Bureau also indicated that if a branch rail line divided an allotment into separate pastures, this could provide grazing management options, potentially benefiting livestock and vegetation management.

8.11.1 (7212)
Comment - EIS001337 / 0092
Page 3-101 Table 3-33. This table does not appear to reflect Bureau of Indian Affairs lands that would be crossed in the vicinity of U.S. 95 north of Las Vegas.

Response
Table 3-33 of the EIS does not include the Bureau of Indian Affairs lands referred to in this comment because the DOE analysis was limited to lands within the candidate rail corridors. However, Figure 3-1 does recognize lands controlled by Native American tribes in Nevada.

Section 6.3.2.2.5 of the EIS indicates that the Valley Modified Corridor would pass within about 1.6 kilometers (1 mile) of the Las Vegas Paiute Indian Reservation north of Las Vegas.

8.11.1 (7237)
Comment - EIS001337 / 0119
Page 8-87 Section 8.4.2.1. This section should recognize that before the Caliente Intermodal site could be used by DOE the existing City of Caliente wastewater treatment facilities would have to be relocated. A site for such relocation would need to be obtained by DOE.

Response
Section 6.3.3.2.1 of the EIS acknowledges that the northern site includes an existing wastewater treatment plant. The EIS has been revised by stating that a transfer of property from the Bureau, the City of Caliente, or other entities to DOE would be required.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada.

Nonetheless, should the heavy-haul truck implementing alternative be selected for transporting large rail casks to the Yucca Mountain site, and the Caliente Route implementing alternative be identified as preferred, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including location of facilities.

8.11.1 (7416)
Comment - EIS001912 / 0011
Lander County is opposed to the Crescent Valley rail alternative. The lack of proposed mitigation, limited impact analysis, and failure to consult appropriate land management agencies brings into question DOE's commitment to building a transportation facility which adequately protects public health and implement mitigation which eliminates the radiological risks again imposed on Nevada communities.

Response
DOE believes that the EIS provides the environmental impact information necessary to make certain broad transportation-related decisions, namely the choice of a national mode of transportation outside Nevada (mostly rail or mostly legal-weight truck), the choice among alternative transportation modes in Nevada (mostly rail, mostly legal-weight truck, or heavy-haul truck with use of an associated intermodal transfer station), and the choice among alternative rail corridors or heavy-haul truck routes with use of an associated intermodal transfer station in Nevada. DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada.

If the Yucca Mountain site was approved, DOE would issue at some future date a Record of Decision to select a mode of transportation. If, for example, mostly rail was selected (both nationally and in Nevada), DOE would identify a preference for one of the rail corridors in consultation with affected stakeholders, particularly the State of Nevada. In this example, DOE would announce a preferred corridor in the *Federal Register* and other media. No sooner than 30 days after the announcement of a preference, DOE would publish its selection of a rail corridor in a Record of Decision. A similar process would occur in the event that DOE selected heavy-haul truck as its mode of transportation in Nevada. Other transportation decisions, such as the selection of a specific rail alignment within a corridor, would require additional field surveys, State and local government and Native American tribal consultations, environmental and engineering analyses, and appropriate National Environmental Policy Act reviews.

With regard to risk reduction and mitigation, DOE is committed to protecting human and environmental health as its first priority. Transportation of spent nuclear fuel and high-level radioactive waste would be conducted and risks would be managed in accordance with Federal regulations. DOE would consider the costs and benefits of additional protective and mitigative measures as more detailed transportation planning and studies are conducted to support the proposed repository. Section 9.3 of the EIS discusses potential measures under consideration by DOE to mitigate the impacts of transporting spent nuclear fuel and high-level radioactive waste to the proposed repository.

Appendix C of the EIS presents a list of Federal, state, local, and tribal government agencies and other organizations with which DOE has initiated interactions during the preparation of the EIS. As stated in Section C.2.4, Lander County is one of the units of local government that has been offered the opportunity to submit documents providing perspectives of issues associated with the EIS. DOE has held formal meetings twice a year with the affected units of local government.

8.11.1 (7453)
Comment - EIS001969 / 0009
The need for rights of way across public lands to access the Yucca Mountain Facility could create conflicts with existing land uses in the area through traffic, construction, accidents and incidental spillage of nuclear materials containers. How will these be addressed?

Response
Sections 6.3.1, 6.3.2, and 6.3.3 of the EIS address the potential impacts of Nevada legal-weight truck, heavy-haul truck, and branch rail line implementing alternatives, respectively, including land-use impacts. These sections recognize and describe the impacts related to construction and operation of branch rail lines and developing or upgrading highways, including traffic impacts. Section 6.2.4.2 addresses impacts from accidents, including spills.

DOE acknowledges that some land-use conflicts could be inevitable during the construction and operation of a transportation corridor for the Yucca Mountain Repository. The implementing alternatives for transportation described in the EIS were based in part on attempts to avoid or minimize potential land-use conflicts.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

8.11.1 (7518)
Comment - EIS001912 / 0049
Section 3.2.2.1. The Baseline Description in the DEIS does not provide for the following:

- Outdoor recreation use
- Appropriate visual analysis including visual characteristics of surrounding lands.
- Specific land uses residential, commercial, agricultural
- Mining claims and activity-patented mining claims
- Grazing-allotment, name of permit holder, season of use, total aums

Land use maps showing types of ownership and uses along the routes should be included in the DEIS. Simply referencing other BLM [Bureau of Land Management] documents is not sufficient. Lander County is not in the Tonopah Resource Area. All of the aforementioned resources and uses need to be shown on maps with discussion of various resources. Did any DOE staff or contractors actually visit the areas along proposed routes? Please identify the resource expert and the type of site visits made.

Response
Sections 6.3.2.1 and 6.3.2.2 of the EIS address the potential common and specific impacts of Nevada rail implementing alternatives, respectively, including land-use impacts. As described in the introduction to Chapter 6,

in response to interest and suggestions by the public and to better describe potential impacts of transportation alternatives in Nevada, DOE modified analyses and presentations of impacts in the EIS. For example, additional details, when available, and evaluations are included for wilderness study areas, grazing allotments, sensitive biological resources, management areas, cultural resources, and hydrologic resources.

Section 3.2.2.1 of the EIS is based on a combination of published information and field observations. Based on published environmental data, 54 springs, perennial streams, and Bureau of Land Management-designated riparian areas were visited by DOE biologists to determine if those sites contain wetlands (DIRS 155378-Reilly and Smith 1997). Fifteen locations with sensitive species were visited to ensure that the sites still had suitable habitat for the species (DIRS 154825-CRWMS M&O 1997). In addition, DOE engineers made an initial visual survey of all rail corridor alternatives as a part of the routing analysis. Topography, land use, and known areas of environmental concern were observed as a part of the corridor centerline selection to minimize impacts to stakeholders (DIRS 131242-CRWMS M&O 1997). Cultural resources, noise, aesthetics, and existing visual conditions were observed by contractor personnel on a field trip along proposed heavy-haul truck routes and rail corridors. Additional interviews with responsible State and Federal agencies were conducted and additional literature searches were performed during the trip. A report has been prepared detailing the information obtained during the trip (DIRS 155826-Nickens and Hartwell 2001) and the relevant information is included in Chapter 6 of the EIS.

DOE acknowledges the recreational resources afforded by open space within parts of Nevada. In Section 6.3.2 of the EIS, DOE identifies potentially affected natural resource areas within each corridor. DOE would seek to minimize any restriction to or control over public lands used for recreational purposes and would develop specific mitigation measures to alleviate potential impediments to continued use of public lands.

For any land that would be acquired, including mineral claims, landowners would be fairly compensated under Federal eminent domain procedures. When affected property was not acquired by eminent domain, mitigation measures would be evaluated and implemented as appropriate, as indicated in Section 9.3.1 of the EIS, when construction and operation of transportation facilities would result in (1) impacts to publicly used lands such as grazing allotments, (2) direct and indirect land loss, and (3) displacement of capital improvements.

DOE believes that the EIS provides the environmental impact information necessary to make certain broad transportation-related decisions, namely the choice of a national mode of transportation outside Nevada (mostly rail or mostly legal-weight truck), the choice among alternative transportation modes in Nevada (mostly rail, mostly legal-weight truck, or heavy-haul truck with use of an associated intermodal transfer station), and the choice among alternative rail corridors or heavy-haul truck routes with use of an associated intermodal transfer station in Nevada.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

8.11.1 (7625)
Comment - EIS001912 / 0081
P. 6-36 looks only at disturbed lands and not lands which are surrounding the corridors which could be impacted.

Response
DOE has not limited its assessment of land use to disturbed lands or changes in ownership. In fact, impacts to land use could occur even if ownership did not change or there was no direct land disturbance. For example, dividing grazing land in a rail corridor could result in the creation of a barrier to cattle movement and could affect a rancher's ability to get cattle to water.

DOE is aware of the possible restrictions inherent in the construction and operation of a transportation corridor and would consider appropriate mitigation actions. For example, the discussions of the corridors in Section 6.3.2.2.1 of the EIS identify potential conflicts with existing or future land uses that a corridor could affect.

8.11.1 (8044)
Comment - EIS000391 / 0010
Other transportation issues of the waste to the Yucca Mtn. site are:

Land use consideration of present and planned land uses along possible routes identified.

Response
In its assessment of potential land-use impacts, DOE considered the differences between land-use types, land disturbances, land ownership, and the creation of barriers. The assessment compared proposed use of land for Yucca Mountain transportation purposes to existing or other proposed land uses to estimate the magnitude and context of potential conflicts. If an action would result in continuing a current land use either due to little or no impact or through mitigation, the effects were considered insignificant or small. For example as discussed in Chapter 6, the impacts to livestock and Bureau of Land Management grazing allotments could be mitigated through the use of fencing, overpasses, and underpasses, which could provide a water source to animals cut off from current sources. By providing these mitigating measures, the impacts would be lessened and considered small. If an action could result in departures from existing uses, and mitigation could not remedy the conflict, the effects could be more substantial.

Factors considered when assessing impacts included the uniqueness of a geographic area; presence of historic, scientific, and cultural resources; potential effects on endangered species; and compliance with Federal, State, or local law. Based on information available, potential land-use impacts associated with Yucca Mountain transportation activities could be minimized through judicious alignment of the branch rail line or through mitigation. Overall, the land-use impacts are not deemed substantial because of the use of various optional and alternate routes within the corridor, mitigation measures, and the judicious routing of the branch rail line within the corridor.

Section 8.4.2 of the EIS discusses the impacts that reasonably foreseeable future actions could have on the construction and operation of a branch rail line.

8.11.1 (8100)
Comment - EIS000406 / 0019
The following issues need to be addressed and thoroughly analyzed concerning direct impacts to Lander County in a detailed manner:

Ranching and grazing allotment impacts

Response
Land-use and ownership impacts common to the construction and operation the five branch rail lines are discussed Section 6.3.2.1 of the EIS and impacts specific to the Carlin Corridor are discussed in Section 6.3.2.2.2. The EIS determines that a branch rail line could create a barrier to livestock movement, and quantitatively addresses the acres of grazing lands potentially affected by candidate rail corridors.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

If a corridor was selected for construction of a branch rail line, DOE would conduct field studies along the corridor that would identify specific land uses to be avoided. DOE would avoid land-use impacts and private land to the maximum possible extent. For example, access to grazing areas, forage, and water can be addressed in the early design phase of the rail corridor/alignment. This process would address Bureau of Land Management standard operating procedures for rights-of-way, construction and operation. Water wells would be required along the rail corridor in some areas for soil compaction and dust control during rail construction. It could be possible to improve

grazing allotments if the Bureau permitted the use of this water for grazing. Grazing allotment access could be accomplished by designing at-grade structures to permit cattle to cross under the railbed.

8.11.1 (8128)
Comment - EIS001653 / 0080
Pg. 6-38 Section 6.3.1 states, "As a consequence, impacts to land use ... would not be large. With respect to land use, what process or methodology did DOE use to determine that impacts would not be large? Did DOE consider impacts to real estate development and values along the proposed route?

Response
In its assessment of potential land-use impacts, DOE considered the differences between land-use types, land disturbances, land ownership, and the creation of barriers. The assessment compared proposed use of land for Yucca Mountain transportation purposes to existing or other proposed land uses to estimate the magnitude and context of potential conflicts. If an action would result in continuing a current land use either due to little or no impact or through mitigation, the effects were considered insignificant or small. For example, as discussed in Chapter 6, the impacts to livestock and Bureau of Land Management grazing allotments could be mitigated through the use of fencing, overpasses, and underpasses, which could provide a water source to animals cut off from current sources. By providing these mitigating measures, the impacts would be lessened and considered small.

In light of the comments received on the Draft EIS concerning perceived risk, DOE examined relevant studies and literature on perceived risk and stigmatization of communities to determine whether the state-of-the-science in predicting future behavior based on perceptions had advanced sufficiently since scoping to allow DOE to quantify the impact of public risk perception on economic development or property values in potentially affected communities (see Appendix N of the EIS). Of particular interest were those scientific and social studies carried out in the past few years that directly relate to either Yucca Mountain or to DOE actions such as the transportation of foreign research reactor spent nuclear fuel. DOE reevaluated the conclusions of previous literature reviews such as those conducted by the Nuclear Waste Technical Review Board and the State of Nevada, among others. DOE has concluded that:

- While in some instances risk perceptions could result in adverse impacts on portions of a local economy, there are no reliable methods whereby such impacts could be predicted with any degree of certainty

- Much of the uncertainty is irreducible, and

- Based on a qualitative analysis, adverse impacts from perceptions of risk would be unlikely or relatively small.

While stigmatization of southern Nevada can be envisioned under some scenarios, it is not inevitable or numerically predictable. Any such stigmatization would likely be an aftereffect of unpredictable future events, such as accidents, which would not be expected to occur. As a consequence, DOE addressed but did not attempt to quantify any potential for impacts from risk perceptions or stigma in this Final EIS.

8.11.1 (8145)
Comment - EIS001653 / 0088
DOE has not considered impacts to grazing allotments, mining, recreation use, and hunting. Are there any patented mining claims within the proposed rail corridor? How will DOE compensate mining claim holders? How many animal units months will be lost? What will DOE do to maintain access to water and movement of livestock in and around the rail corridor? What are BLM's [Bureau of Land Management's] standard operating procedures for rights of way, construction and operation?

Response
Land-use and ownership impacts common to the construction and operation of all five of the branch rail lines are discussed in Section 6.3.2.1 of the EIS and impacts specific to each proposed route are discussed in the appropriate subsection. The EIS indicates that a branch rail line would affect grazing allotments, mobility of grazing animals, watering capabilities, and recreational access. Based on current information provided by the Bureau of Land Management, the patented mining claims were skirted as much as possible by the five candidate rail corridors.

DOE acknowledges the recreational resources afforded by open space within parts of Nevada. In Section 6.3.2 of the EIS, DOE identifies potentially affected natural resource areas within each corridor. DOE would seek to minimize any restriction to or control over public lands used for recreational purposes and would develop specific mitigation measures to alleviate potential impediments to continued use of public lands.

For any land that would be acquired, including mineral claims, landowners would be fairly compensated under Federal eminent domain procedures. When affected property was not acquired by eminent domain, mitigation measures would be evaluated and implemented as appropriate, as indicated in Section 9.3.1 of the EIS, when construction and operation of transportation facilities would result in (1) impacts to publicly used lands such as grazing allotments, (2) direct and indirect land loss, and (3) displacement of capital improvements.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

If a corridor was selected for construction of a branch rail line, DOE would conduct field studies along the corridor that would identify specific land uses to be avoided. DOE would avoid land-use impacts and private land to the maximum possible extent. For example, access to grazing areas, forage, and water could be addressed in the early design phase of the rail corridor/alignment. This process would address Bureau of Land Management's standard operating procedures for rights-of-way, construction and operation. Water wells would be required along the rail corridor in some areas for soil compaction and dust control during rail construction. It could be possible to improve grazing allotments if the Bureau permitted the use of this water for grazing. Grazing allotment access can be accomplished by designing at-grade structures to permit cattle to cross underneath the railbed.

A branch rail line could be constructed across a mining claim. However, access to claims would not be restricted with the exception of that portion where the actual roadbed was constructed. Access to either side of a valley traversed by a rail branch line would be possible. Sufficient crossing structures would be constructed to allow access from either side.

8.11.1 (9505)
Comment - EIS001888 / 0164
[Summary of comments noted by Clark County Nuclear Waste Division staff at various citizens' meetings.]

It seems obvious that DOE did not look at the site plan for Summerlin or the Las Vegas Valley and all the residential and commercial uses planned along the western beltway.

Response
The representative highway routes identified for the EIS analysis conform to U.S. Department of Transportation regulations (49 CFR 397.101). These regulations, developed for transport of Highway Route Controlled Quantities of Radioactive Materials, require such shipments to be on preferred routes selected to reduce the time in transit. A preferred route is an Interstate System highway, bypass, or beltway, or an alternate rout designated by a state or tribal routing agency. Alternate routes could be designated by states or tribes under Department of Transportation regulations (49 CFR 397.103) that require consideration of the overall risk to the public and prior consultation with local jurisdictions and other states and tribes. The State of Nevada has not designated an alternate route, so DOE used the western Las Vegas Beltway for the EIS analysis.

8.11.1 (9646)
Comment - EIS001888 / 0310
Another issue is ongoing interaction between the Bureau of Land Management and the local governments in southern Nevada and California. Although the BLM [Bureau of Land Management] manages most of the land in the region, the BLM has made agreements with various local governments in the region. It is likely that major

construction of rail lines, heavy haul roads, and intermodal facilities will conflict with these agreements. The DEIS does not address the issue.

Response
Section 6.3 of the EIS describes the methods that were used to analyze the potential impacts to the many resource areas in Nevada from implementation of alternative transportation modes and routes. These analyses, discussed in subsequent sections, include land use and ownership and describe land-use and ownership issues for all three modes and the five candidate rail corridors. Existing land use and ownership is described, as are potential impacts on private, Bureau of Land Management, and other landowners.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

8.11.1 (9851)
Comment - EIS001888 / 0415
[Clark County summary of comments it has received from the public.]

Commenters suggested that the EIS evaluate the impacts to current land uses along the potential regional rail and heavy-haul routes. Land uses and related issues identified for evaluation include: (1) the availability of public lands, (2) the ease of obtaining rights-of-way, (3) consideration of eminent domain, (4) impacts to hunting and fishing opportunities and other recreational water uses, (5) effects on grazing allotments and livestock permittees, (6) public travel across Big Smokey Valley, and (7) potential interference with U.S. Air Force operations on the Nellis Bombing and Gunnery Range.

Response
Section 6.3.2.2 of the EIS notes that the branch rail lines could require conversion of land within existing grazing allotments. DOE expects the potential impacts of construction to have a greater effect upon grazing lands than would operations. During the construction phase, it could be difficult for cattle to access water if the construction zone divided the grazing allotment. Construction activity and temporary camps with the presence of construction crews could result in disrupting ranch operations and livestock rotations. There is a possibility that some livestock could be killed along roads used during construction.

DOE, however, expects that after construction, operational impacts would be less even though the branch rail lines could divide some grazing lands. Input received by DOE from the Bureau of Land Management indicates that dividing grazing lands would result in a small loss of animal unit months in large allotments but would be unlikely to affect ranch operations. The loss of animal unit months in small allotments could affect the grazing permittee's operation. The Bureau indicated that if a branch rail line divided an allotment into separate pastures, such pastures could provide an opportunity to rotate grazing area use, allowing for new grazing management options. This opportunity could benefit livestock and vegetation management.

As indicated in Section 9.3.1 of the EIS, DOE would evaluate appropriate mitigation actions that specifically address access to publicly owned lands, including grazing permits and leases. These actions could include providing access to lands on both sides of a branch rail line through underpasses and assisting in providing water should there be a need.

DOE acknowledges the recreational resources afforded by open space within parts of Nevada. In Section 6.3.2 of the EIS, DOE identifies potentially affected natural resource areas within each corridor. DOE would seek to minimize any restriction to or control over public lands used for recreational purposes and would develop specific mitigation measures to alleviate potential impediments to continued use of public lands.

For any land that would be acquired, including mineral claims, landowners would be fairly compensated under Federal eminent domain procedures. When affected property was not acquired by eminent domain, mitigation measures would be evaluated and implemented as appropriate, as indicated in Section 9.3.1 of the EIS, when construction and operation of transportation facilities would result in (1) impacts to publicly used lands such as grazing allotments, (2) direct and indirect land loss, and (3) displacement of capital improvements.

DOE is aware of the operational issues associated with the Nellis Air Force Range. Section 8.1.2.2 of the EIS discusses Nellis in the context of potential cumulative impacts. DOE has initiated interagency and intergovernmental interactions with a number of governmental agencies and other organizations, including the U.S. Air Force. Appendix C provides a summary of DOE's interactions with other organizations.

8.11.1 (10851)
Comment - EIS000359 / 0007
DOE also doesn't assume any mitigation for the transportation accident scenario, which is misleading given that in the unlikely event of a severe accident, emergency response will occur swiftly and a comprehensive plan will be developed to mitigate the consequences of an accident. We have emergency response capability on a federal level to respond to the radiation accidents in the United States, and radiation workers would be available to assist in the unlikely event of an accident, as well as to train emergency response workers across the states.

Response
The analysis of the impacts of transportation accidents in the EIS did not take credit for the mitigating effects of emergency response activities. However, in response to comments, additional information on emergency response activities following transportation accidents has been added to Section M.5 of the EIS.

Section 180(c) of the NWPA requires DOE to provide technical assistance and funds to states for training of public safety officials of appropriate units of local government and tribes through whose jurisdictions it would transport spent nuclear fuel and high-level radioactive waste. The training would cover procedures required for safe routine transportation of these materials, as well as procedures for dealing with emergency response situations. DOE would provide the assistance based on the training needs of the states and tribes, as they determined using an up-front planning grant and based on availability of funds in annual Program budgets specified by Congress. Additional Federal response capabilities, such as expert services from the Radiological Assistance Program Team, could be activated, as requested by states and tribes. The schedule in the proposed policy and procedures for implementation of Section 180(c) (63 *FR* 23753, April 30, 1998) is designed to provide adequate time for training of first responders in advance of the first shipments. Should a decision to proceed with the development of a repository at Yucca Mountain be made, shipping routes would be identified at least 4 years before shipments began and Section 180(c) assistance would be made available approximately 4 years prior to shipments through a jurisdiction. See Section M.6 of the EIS for a discussion of the DOE Section 180(c) Policy and Procedures.

DOE has several programs available to provide assistance to state, tribal, and local governments in response to radioactive material accidents. The Radiological Assistance Program, for example, provides trained personnel with equipment to evaluate, assess, advise, and assist in the mitigation and monitoring of potential immediate hazards associated with a transportation accident. As part of the program, DOE maintains eight Regional Coordinating Offices across the country that are staffed 24 hours a day, 365 days a year The staff consists of nuclear engineers, health physicists, industrial hygienists, public affairs specialists, and other personnel who provide field monitoring, sampling, decontamination, communications, and other services, as requested. In addition DOE's Radiation Emergency Assistance Center/Training Site (REAC/TS) focus on providing rapid medical attention to people involved in radiation accidents. REAC/TS maintains a 24-hour response center to provide direct support, including deployable equipment and personnel trained and experienced in the treatment of radiation exposure to assist Federal, state, tribal, and local organizations.

8.11.1 (11282)
Comment - EIS001814 / 0016
DEIS Page 2-47
Under this scenario, DOE would construct and operate a branch line in Nevada. Based on previous studies (described in Section 2.3), DOE has narrowed its consideration for a new branch rail line to five potential rail corridors Caliente, Carlin, Caliente Chalk Mountain, Jean, and Valley Modified.

DOE's corridor selection study is flawed. The first selection criteria used by DOE to select potential routes was land use compatibility. For this criteria, DOE selected corridors based upon using "land under public ownership, to the greatest extent possible, to minimize land-use conflicts." Favorable topography was used as a selection criteria only within "areas not excluded because of land-use conflicts" (Nevada Potential Repository Preliminary Transportation Strategy, Study 1, April 1995, page 25).

There are serious problems with this approach. Land ownership does not accurately reflect land-use. Most western ranching operations are based upon a combination of privately owned fee land and grazing leases on publicly owned lands. In many, if not all cases, the ranching unit depends on these grazing leases to be economically viable. Most grazing leases are held by the ranches that can access the lease as a logical part of their operation. Splitting an existing operation with a rail line, that will limit access to the leased land, can have significant adverse effects on the operation of the ranch. Using the avoidance of privately owned land as the corridor selection process without regard to the existing ranching operations' use of private and public lands may very well result in greater impact on an operation than using private land.

Most of the private land in western States with high percentages of federally owned land is land with gentle topography. Early settlers selected the flatter land for their own. The land with rugged topography was not settled, and remained in public ownership. This shift to rugged terrain to avoid private land is a dominant factor in most of the routes selected for further study in the 1990 Preliminary Rail Access Study as reflected by the following: "An option was selected from the Caliente area in order to avoid land use impacts encountered in most of the southern areas of Nevada, ... The base route has the most favorable land-use compatibility, but would incur significant costs due to the complex engineering and construction required to traverse rough terrain" (page 17). "However, the checkerboard pattern of private and public land ownership surrounding the railroads across northern Nevada makes the complete avoidance of private land difficult. The minimum impact departure point is a location about 5 miles west of Carlin. The terrain in this area is so rugged that private developers were uninterested in the land, and as a result, the greater portions of the terrain were left in BLM [Bureau of Land Management] ownership" (page 21).

By using land ownership for the first selection criteria, DOE's selection process actually favored more rugged terrain where construction of the proposed rail line is more difficult. This creates many additional land use impacts due to the extensive cuts and fills required by unfavorable topography. These cuts and fills will further exacerbate the problem faced by ranchers of moving livestock and equipment across the rail line.

Crucial habitat for big game is frequently located in or near rugged terrain. This is especially true for crucial winter habitat. Daylight cuts required to traverse rugged terrain also pose a significant threat to big game, which tend to use these areas for movement, especially in times of heavy snow cover. When trapped in a daylight cut, big game cannot escape from an oncoming train, resulting in significant mortality rates for big game in these areas. Thus, the selection criteria that favors more rugged terrain by virtue of avoiding private land ownership greatly increases the potential impact on biological resources.

Roadless areas are also more likely to be found in rugged terrain. Virtually all potential wilderness areas are located on public lands. The selection criteria that avoids private lands results in more potential impact to roadless areas and potential wilderness areas.

Response

Sections 2.1.3.3 and 2.3.3 of the EIS describe the methods used to select and describe the alternative routes and modes for transportation in Nevada. Section 6.3 describes the potential impacts for these routes and modes.

DOE's objective, with respect to rail corridors, was to identify reasonable and representative 400-meter (0.25-mile)-wide corridors that would produce the least environmental and stakeholder impact based on published environmental and land-use data. Another consideration was to evaluate corridors that are cost-effective (for example, balancing cut and fill to the extent possible).

In its assessment of potential land-use impacts, DOE considered the differences between land-use types, land disturbances, land ownership, and the creation of barriers. The assessment compared proposed use of land for Yucca Mountain transportation purposes to existing or other proposed land uses to estimate the magnitude and context of potential conflicts. If an action would result in continuing a current land use either due to little or no

impact or through mitigation, the effects were considered insignificant or small. For example, as discussed in Chapter 6, the impacts to livestock and Bureau of Land Management grazing allotments could be mitigated through the use of fencing, overpasses, and underpasses, which could provide a water source to animals cut off from current sources. By providing these mitigating measures, the impacts would be lessened and considered small. If an action could result in departures from existing uses, and mitigation could not remedy the conflict, the effects could be more substantial.

Factors considered included the uniqueness of a geographic area; presence of historic, scientific, and cultural resources; potential effects on endangered species; and compliance with Federal, State, or local law. Based on information available, potential land-use impacts associated with Yucca Mountain transportation activities could be minimized through judicious alignment of the branch rail line or through mitigation. Overall, the land-use impacts are not deemed substantial because of the use of various optional and alternate routes within the corridor, mitigation measures, and the judicious routing of the branch rail line within the corridor.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

8.11.1 (11298)
Comment - EIS001814 / 0027
DEIS Page 2-70
One new route, Valley Modified, was added in the 1995 Study based on updated information from the Bureau of Land Management on the status of two Wilderness Study Areas that represent possible land-use conflicts for the Valley route in the original evaluation.

The potential land use constraints for the Valley Modified route have not been eliminated. 1995 Study states "The original Valley route identified in the Preliminary Rail Access Study was considered not feasible due to possible land use conflicts with two BLM [Bureau of Land Management]-administered areas (Quail Springs WSA NV-050-411 and Nellis WSA NV-050-4R A, B, and C) that were studied for potential designation as Wilderness Areas. Due to uncertainties on the final land use of these areas (based on recent discussion with BLM Las Vegas District personnel), the Valley Modified route was added to the list of alternatives" (Nevada Potential Repository Preliminary Transportation Strategy, Study 1, TRW, April 1995, p. 34). Uncertainty in the final land use for an area does not mean that the land-use constraint has been eliminated. These same land-use conflicts with the wilderness study areas are reiterated in the 1996 analysis (Nevada Potential Repository Preliminary Transportation Strategy, Study 2, TRW, February 1996, p. 2-18).

Response
Section 2.3.3.1 of the EIS discusses the process used to evaluate the 13 candidate rail routes in Nevada and which routes were eliminated from further study.

Section 6.3.2.2.5 of the EIS describes the impacts from construction and operation of the Valley Modified Corridor Implementing Alternative. The land-use discussion has been expanded and discusses the relationship of the Sheep Mountain Alternate and the Wilderness Study Areas raised by the commenter. Although the Bureau of Land Management considers the Wilderness Study Areas unsuitable for inclusion in the National Wilderness System, DOE would have to consult with the Bureau before it could build a branch rail line.

In addition, based on public comments, a new subsection has been added to Section J.3.1.2 of the EIS that discusses potential land-use conflicts. Figure J-20 shows the Quail Springs Wilderness Study Area and the Nellis A, B, and C Wilderness Study Areas in relation to the Valley Modified Corridor.

8.11.1 (11309)
Comment - EIS001814 / 0038
DEIS Page 6-8
Land-use impacts would be greatest for the mostly rail scenario, with disturbed land areas ranging from about 5 square kilometers (1,200 acres) for the Valley Modified route to 19 square kilometers (5,000 acres) for the Carlin route.

DOE has not accurately identified or assessed the land-use impacts of the Nevada Transportation alternatives. Even where DOE has identified land-use impacts, DOE has understated the nature and severity of the impacts. The failure by DOE to accurately describe the proposed action also prevents an adequate assessment of land-use impacts. For example, the land-use impacts associated with the development of ballast and sub-ballast quarries, solid waste disposal facilities, construction lay-down areas, and construction staging areas cannot be assessed until these areas are identified.

The conclusions regarding land-use impacts in the DEIS rely primarily on disturbed acreage. Although this is one measure of land-use impacts, it is not the only one. For linear facilities such as a branch rail line, an assessment of land-use impacts should also include an evaluation of the impacts of bisecting current and future land-uses. As discussed above in the comment on Section 2.1.3.3.2 Nevada Rail Scenario, splitting an area with a branch rail line can have significant impacts on the entire area, not just the area within the right-of-way. This is particularly true for ranching operations. DOE has not assessed this type of land-use impact in the EIS.

DOE has identified a number of land-use conflicts with the proposed rail line, but has not accurately characterized the impact of these conflicts. For example, rail potential corridors cross the Simpson Park Habitat Management Area (Carlin), the Old Spanish Trail/Mormon Road special recreation management area (Jean), Wilderness Study Areas (Valley Modified) and the Desert National Wildlife Range (Valley Modified). A rail line through these special land-use areas would have significant impact on the purpose of these special areas. The EIS does not even discuss these impacts. It is particularly difficult to understand why DOE has not eliminated the Caliente Chalk Mountain alternative. The U.S. Air Force has unequivocally stated that this alternative is unacceptable due to its impacts on the Nellis Air Force Range.

Proposed rail line corridors also cross areas of potential future community growth. Although DOE identifies these areas, the EIS does not contain an assessment of the impacts of this conflict on future community growth patterns. The area of particular concern is the impact of the proposed Valley Modified route on growth in the North Las Vegas urban area.

Many of the areas crossed by potential rail corridors are currently remote, undeveloped areas. Much of the area is currently roadless, including Wilderness Study Areas. Regardless of the decision by the land management agency regarding classification as wilderness, construction of a rail line through a remote, roadless area will have land-use impacts. These changes in land-use should be identified and assessed.

From a land-use perspective, the only rail alternative that does not have serious land-use conflicts is the Caliente corridor. Even this corridor could impact the Nellis Air Force Range. All other rail alternatives cross or impact areas designated as special purpose land-use. These conflicts are summarized below:

Caliente: Requires use of land on Nellis AF [Air Force] Range. Alternatives cross difficult terrain.

Carlin: Requires use of land on Nellis AF Range. Alternatives cross difficult terrain.
Bates Mountain Antelope Release Area
Simpson Park Habitat Management Area

Caliente/Chalk Mountain: Traverses Nellis AF Range, which is unacceptable to AF.

Jean: Impacts Pahrump potential community growth
Old Spanish Trail/Mormon Road special recreation management area
Adjacent to Stateline Wilderness Area

Valley Modified: Encroaches on the Desert National Wildlife Range
Impacts community growth in the North Las Vegas urban area
Crosses Nellis A, B, & C and Quail Spring WSA [Wilderness Study Area]
Impacts Nellis AFB small arms range
Impacts Indian Springs Auxiliary Field facilities

Response
Sections 6.3.2.1 and 6.3.2.2 of the EIS address the potential common and specific impacts of Nevada rail implementing alternatives, respectively, including land-use impacts. In an effort to provide decisionmakers and stakeholders with the information needed to make a rail or heavy-haul truck transportation decision for Nevada, regions of influence were developed and the level of information needed within those regions defined.

In its assessment of potential land-use impacts, DOE considered the differences between land-use types, land disturbances, land ownership, and the creation of barriers. The assessment compared proposed use of land for Yucca Mountain transportation purposes to existing or other proposed land uses to estimate the magnitude and context of potential conflicts. If an action would result in continuing a current land use either due to little or no impact or through mitigation, the effects were considered insignificant or small. For example, as discussed in Section 6.3.2.1, the EIS determines that a branch rail line could create a barrier to livestock movement, and quantitatively addresses the acres of grazing lands potentially affected by candidate rail corridors. However, the impacts to livestock and Bureau of Land Management grazing allotments could be mitigated through the use of fencing, overpasses, and underpasses, which could provide a water source to animals cut off from current sources. By providing these mitigating measures, the impacts would be lessened and considered small. If an action could result in departures from existing uses, and mitigation could not remedy the conflict, the effects could be more substantial. Factors considered when assessing impacts included the uniqueness of a geographic area; presence of historic, scientific, and cultural resources; potential effects on endangered species; and compliance with Federal, State, or local law.

As described in the introduction to Chapter 6, in response to interest and suggestions by the public and to better describe potential impacts of transportation alternatives in Nevada, DOE modified analyses and presentations of impacts in the EIS. For example, additional details, when available, and evaluations are included for wilderness study areas, grazing allotments, sensitive biological resources, management areas, cultural resources, and hydrologic resources.

Section 6.3.2.2.5 of the EIS describes the impacts from construction and operation of the Valley Modified Corridor. The land-use discussion has been expanded and discusses the relationship of the Sheep Mountain Alternate and the Wilderness Study Areas raised by the commenter. In addition, a new subsection has been added to Section J.3.1.2 that discusses potential land-use conflicts. Figure J-20 shows the Quail Springs Wilderness Study Area and the Nellis A, B, and C Wilderness Study Areas in relation to the Valley Modified Corridor.

DOE acknowledges the recreational resources afforded by open space within parts of Nevada. In Section 6.3.2 of the EIS, DOE identifies potentially affected natural resource areas within each corridor. DOE would seek to minimize any restriction to or control over public lands used for recreational purposes and would develop specific mitigation measures to alleviate potential impediments to continued use of public lands.

In comments on the Draft EIS, the Air Force restated its position that routes across the Nevada Test and Training Range would not be consistent with its national security uses. The Air Force concluded that use of such a corridor or route could adversely affect critical and sensitive national security activities. In response, DOE reevaluated whether the Caliente-Chalk Mountain Corridor and Caliente/Chalk Mountain heavy-haul truck route should be eliminated from further evaluation. DOE met with the Air Force (see Appendix C of the EIS), considered the information they provided, and concluded that the Caliente-Chalk Mountain Corridor and Caliente/Chalk Mountain heavy-haul truck route implementing alternatives should remain identified as “nonpreferred alternatives” in this Final EIS.

DOE believes, however, that the EIS adequately analyzes the environmental impacts that could result from the Proposed Action. In addition, the EIS provides the environmental impact information necessary to make certain broad transportation-related decisions, namely the choice of a national mode of transportation outside Nevada

(mostly rail or mostly legal-weight truck), the choice among alternative transportation modes in Nevada (mostly rail, mostly legal-weight truck, or heavy-haul truck with use of an associated intermodal transfer station), and the choice among alternative rail corridors or heavy-haul truck routes with use of an associated intermodal transfer station in Nevada.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

8.11.1 (11760)
Comment - EIS001660 / 0054
The land use descriptions for the rail corridors in Nevada are inadequate. (p. 3-101 to -103). The land use regions of influence are narrowly drawn (limited only to disturbed lands and changes in ownership), and the only information provided for the Carlin corridor (for example) is the amount of public and private land. Although the DEIS says that "detailed information on land use is available" in other documents, it fails to describe their contents even briefly, as required by 40 CFR 1502.21.

Response
Section 3.2.2.1 of the EIS provides the baseline environmental information for assessing the potential impacts of implementing Nevada rail implementing alternatives. The more notable land-use features and potential influences that exist or could exist on lands within the corridors are presented in Chapter 6. For example, the land features within the Carlin Corridor are presented in Section 6.3.2.2.2.

In its assessment of potential land-use impacts, DOE considered the differences between land-use types, land disturbances, land ownership, and the creation of barriers. The assessment compared proposed use of land for Yucca Mountain transportation purposes to existing or other proposed land uses to estimate the magnitude and context of potential conflicts. If an action would result in continuing a current land use either due to little or no impact or through mitigation, the effects were considered insignificant or small. For example, as discussed in Chapter 6, the impacts to livestock and Bureau of Land Management grazing allotments could be mitigated through the use of fencing, overpasses, and underpasses, which could provide a water source to animals cut off from current sources. By providing these mitigating measures, the impacts would be lessened and considered small. If an action could result in departures from existing uses, and mitigation could not remedy the conflict, the effects could be more substantial.

Factors considered included the uniqueness of a geographic area; presence of historic, scientific, and cultural resources; potential effects on endangered species; and compliance with Federal, State, or local law. Based on information available, potential land-use impacts associated with Yucca Mountain transportation activities could be minimized through judicious alignment of the branch rail line or through mitigation.

As described in the introduction to Chapter 6, in response to interest and suggestions by the public and to better describe potential impacts of transportation alternatives in Nevada, DOE modified analyses and presentations of impacts in the EIS. For example, additional details, when available, and evaluations were included for wilderness study areas, grazing allotments, sensitive biological resources, management areas, cultural resources, and hydrologic resources.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

8.11.1 (11873)
Comment - EIS001887 / 0388
The statement in the last sentence of the second paragraph that "no new land acquisition and construction would be required to accommodate these shipments" is misleading. There may well be additional land acquisitions and construction required once DOE identifies the specific shipping routes nationwide (something the Draft EIS fails to do). In the case of transuranic waste shipments to the Waste Isolation Pilot Plant in New Mexico, DOE agreed to pay for bypasses around/near Santa Fe and Roswell. There were also safe parking facilities that needed to be improved in other states. It is very likely that, once states and cities become aware of the nature, volume, and duration of the shipping campaign needed to support the Proposed Action, DOE will be forced to assist with the construction of bypasses or other infrastructure improvements.

Response
Section 6.2 of the EIS discusses other potential impacts of national transportation of spent nuclear fuel and high-level radioactive waste. Because existing rail and highway systems would be adequate for transporting spent nuclear fuel and high-level radioactive waste to Yucca Mountain, except under conditions where heavy-haul trucks would be used, infrastructure upgrades would not be necessary and therefore are not included in the analysis. The EIS assumes that sites identified as being served by a railroad would use rail and that sites that do not have rail service (for example, needing rail spur upgrades) would ship using heavy-haul trucks or barges to the nearest railheads.

8.11.1 (12530)
Comment - EIS000630 / 0004
The EIS does not have adequate information about the impacts on grazing. The EIS states that fencing decision rests with the Bureau of Land Management and US Fish and Wildlife. The information on fencing is not definitive and excludes local government, the local community, and most of all, those livestock permittees that will be impacted. They need input.

Response
Land-use and ownership impacts common to the construction and operation of all five of the branch rail lines are discussed Section 6.3.2.1 of the EIS and impacts of specific routes are discussed in appropriate subsections. The EIS determines that a branch rail line could create a barrier to livestock movement, and quantitatively addresses the acres of grazing lands potentially affected by rail corridors.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada. Should the branch rail line implementing alternative be selected and a preferred rail corridor identified, additional engineering and environmental studies would be conducted as a basis for detailed design and for appropriate National Environmental Policy Act reviews. During this process, DOE would initiate consultations with responsible local, State, Federal, and tribal agencies, landowners, and other stakeholders to identify, acquire, and evaluate additional information and develop mitigative actions necessary to minimize potential impacts, including land use.

If a corridor was selected for construction of a branch rail line, DOE would conduct field studies along the corridor that would identify specific land uses to be avoided. DOE would avoid land-use impacts and private land to the maximum possible extent. For example, access to grazing areas, forage, and water could be addressed in the early design phase of the rail corridor/alignment. This process would address Bureau of Land Management standard operating procedures for rights-of-way, construction and operation. Water wells would be required along the rail corridor in some areas for soil compaction and dust control during rail line construction. It could be possible to improve grazing allotments if the Bureau permitted the use of this water for grazing. Grazing allotment access can be accomplished by designing at-grade structures to permit cattle to cross underneath the railbed.

8.11.2 AIR QUALITY

8.11.2 (1410)
Comment - EIS000355 / 0005
I'm as much concerned about the excess heat in the summertime, and the potential below zero temperatures in the wintertime. And I don't see anything like that being addressed with my scientific accuracy. And if you're going to

do an environmental impact statement, you have to consider every aspect of the environment all along the way. Because each is particular, each is specific.

Response
The EIS describes the means of extreme temperature data given current climatic conditions in Section 3.1.2.2. DOE evaluated the effect of extreme temperatures on facility safety systems and transportation casks in the preliminary repository design and preliminary transportation operational plans. Section 4.1.8 describes accident scenario impacts where extreme weather (including extreme episodes of fog, frost, hail, ice cover, etc.) were considered as accident-initiating events. Appendix I provides detailed supporting information on the calculation of the environmental consequences of long-term repository performance, which included evaluating three different climate scenarios and its effect on repository performance.

8.11.2 (4362)
Comment - EIS001157 / 0007
Air quality in the Las Vegas Valley is in the "serious" non-attainment category for carbon monoxide and PM10 particulates. Any induced traffic congestion, such as that created by slow-moving vehicles on a heavy-haul route through the valley, and its associated air quality impacts must be quantified and addressed. Using 10,815 as the number of shipments (Appendix J), there would be about 2 heavy-haul trucks using the roadways every day for 24 years. The DEIS did not propose any mitigation measures to alleviate the deterioration in air quality caused by oversized, heavy-haul vehicles creating congestion.

Response
Section 6.3.3.1 of the EIS notes the potential impacts of temporary but large traffic obstructions on the planned Las Vegas Beltway from heavy-haul trucks. Each of the three implementing alternatives with Las Vegas Valley routes (Caliente/Las Vegas, Sloan/Jean, and Apex/Dry Lake) note the air quality impacts to the Las Vegas Valley airshed from the operation of a few heavy-haul trucks and associated traffic congestion would be very small in comparison to the amount of pollutants emitted by automobile travel and other commercial vehicles in the basin. DOE believes that quantification of such comparatively small impacts is unnecessary. However, DOE anticipates transportation authorities of the State of Nevada and Clark County would require heavy-haul trucks that used the Las Vegas Beltway to travel at times that would not coincide with the heaviest traffic densities (rush-hour periods). Travel-time restrictions and other requirements for heavy-haul vehicles using the Beltway would mitigate impacts to traffic congestion and associated potential air quality impacts.

8.11.2 (5497)
Comment - EIS001660 / 0025
The DEIS fails to analyze impacts of the proposed action on air quality in Nevada and Mineral County (pp. 6-9,-36). Residents and visitors of Mineral County benefit from excellent air quality conditions that could be affected by the proposed action. The DEIS says that air emissions would affect a very large area (p. 6-44) but provides little or no additional information.

The DEIS must disclose the impacts upon Mineral County's air quality from: (1) fugitive dust releases during construction and operations, (2) diesel engine emissions during construction and operations, including emissions from water trucks, and (3) increased risk of wildfire. The analysis must address visual range (i.e., haze) in addition to bulk emissions and concentrations of criteria pollutants.

Response
The Proposed Action would cause no air quality impacts to Mineral County. None of the proposed transportation routes that would require road or rail construction or upgrade activities enter Mineral County. The "large area" in Section 6.3.2.1 of the Draft EIS noted by the commenter refers to the area that could be affected by construction activities that could generate fugitive dust emissions along the length of a corridor. As noted in the EIS, these effects would be temporary and limited to those areas affected by the construction activities. Because of the distance from Mineral County to the proposed repository, there would be no air quality impacts in Mineral County due to repository construction, operation, and closure.

With the exception of the Las Vegas Valley, the areas potentially affected by transportation activities in Nevada are unclassified and therefore "in attainment" with National Ambient Air Quality Standards. Section 3.1.2.1 of the EIS has been clarified to note that these areas are unclassified and in attainment.

8.11.2 (6669)
Comment - EIS001878 / 0052
The DEIS fails to adequately analyze impacts of the proposed action on air quality in Nevada and Eureka County. (pp. 6-9, -36) Appendix G, Air Quality, does not address transportation-related impacts at all. Residents of Eureka County benefit from excellent air quality conditions that could be affected by the proposed action. The DEIS says that air emissions would affect a very large area (p. 6-44) but provides little or no additional information.

The DEIS must disclose the impacts upon Eureka County's air quality from: (1) fugitive dust releases during construction and operations, (2) diesel engine emissions during construction and operations, including emissions from water trucks, and (3) increased risk of wildfire. The analysis must address visual range (i.e., haze) in addition to bulk emissions and concentrations of criteria pollutants.

Response
Chapter 6 and Appendix J of the EIS address potential impacts of repository-related transportation on air quality. Impacts to air quality from the construction and operation of a branch rail line, including one in the Carlin Corridor that could cross the northwest corner of Eureka County, are discussed in Section 6.3.2.1. Emissions during construction would be temporary and would move as construction progressed along the length of the corridor. Based on Federal standards for locomotives, train emissions would not have a significant impact on air quality. Because potential highway upgrades, construction of an intermodal transfer station, or heavy-haul truck operations would not occur in Eureka County, the air quality in the county would not be affected by these activities.

With the exception of the Las Vegas Valley, all areas of Nevada potentially affected by transportation activities addressed in the EIS are "unclassified" and, therefore, considered to be "in attainment" with National Ambient Air Quality Standards. Section 3.1.2.1 of the EIS has been revised to clarify this issue.

There would be no meaningful impacts related to increased risk of wildfire and visual haze in Eureka County from Yucca Mountain Repository-related transportation impacts.

8.11.2 (6901)
Comment - EIS001539 / 0005
Meteorology: The potential for atmospheric inversions increases risks to Denver residents from accidental releases. DEH assumes these risks are unacceptable, until demonstrated otherwise by DOE.

In the DOE/EIS, accidental release scenarios are calculated using two meteorological conditions, the most conservative of which is stated to be "...stable (slowly dispersing) conditions that would not be exceeded (more still) about 95 percent of the time..." (p. 6-30), as based on national weather data (p. J-8). Weather conditions in the Denver area can differ significantly from those in other parts of the country. During the winter months, the Denver air basin commonly experiences atmospheric inversion layers that trap air constituents near ground level and prevent dispersion. DOE must provide documentation that the air modeling procedures conducted in the DOE/EIS are conservative for the inversion/stable weather conditions that may occur in the Denver area.

Response
The national meteorological data set included 5 years of meteorological data from Denver. The data DOE used in its analysis represented stable inversion-type atmospheric conditions that are not unique to Denver. The 95th-percentile characteristics noted are Pasquill-Gifford stability class F (moderately stable) and a wind speed of 0.89 meter per second (2 miles per hour). DOE believes that the 95th-percentile meteorological data used with other selected accident analysis parameters represent conditions that tend to maximize potential credible accident consequences. Selection of worst-case values for all parameters, including meteorology, would lead to accident consequence estimates that are very unrealistic and even incredible when the analysis considers probabilities of occurrence.

8.11.2 (7082)
Comment - EIS001337 / 0031
The County [Lincoln] and City [Caliente] noted that the DEIS should include a description of ambient air quality conditions within potentially impacted basins of Lincoln County. Information regarding current air quality conditions in the County were provided to DOE during EIS scoping. The DEIS Affected Environment section on Air Quality does not even refer to Lincoln County specifically and offers only very general observations not useful to determine impacts.

The County and City noted in scoping comments that although construction and operation of repository system components within Lincoln County will not likely affect regional climate, local climatic conditions may impact upon safe operation of the repository system, particularly transportation. The County and City recommended that DEIS consider impacts of climate upon safe transport of radioactive wastes. Aspects of the climate recommended by the County and City for consideration included precipitation (particularly snow and ice), temperature (as may impact upon highway infrastructure and road surface conditions), and fog. The DEIS section on Affected Environment offers only a modest description of the climate within Lincoln County which provides insufficient information upon which to determine potential effects of climate upon safe transportation.

Response
With the exception of the Las Vegas Valley, all areas of Nevada potentially affected by transportation activities are unclassified for air quality and, therefore, "in attainment" with National Ambient Air Quality Standards. A change in air quality resulting from transportation activities associated with the proposed repository project would be unlikely. DOE has revised Section 3.1.2.1 of the EIS to note that these areas of Nevada are unclassified and, therefore, in attainment.

DOE used U.S. Department of Transportation accident and vehicle fatality rate data (DIRS 103455-Saricks and Tompkins 1999) to analyze the impacts presented in Chapter 6 of the EIS. These data include accident statistics for each state under the full range of climatic, road, and traffic conditions that occurred in the United States from 1994 to 1996. Thus, the EIS analysis considered the effects of weather and road conditions in Nevada such as those identified in the comment. In response to public comments, DOE has included Section M.3 to the EIS to discuss transportation protocols that would be implemented for the travel of vehicles carrying spent nuclear fuel or high-level radioactive waste in the event of inclement weather.

U.S. Department of Transportation regulations for routing shipments of Highway-Route Controlled Quantities of Radioactive Materials (49 CFR Part 397) include rules to minimize radiological risk and consider overall public safety. Highway shipments of spent nuclear fuel and high-level radioactive waste to Yucca Mountain would comply with these regulations. Preferred routes (see 49 CFR 397.103) that the State of Nevada might designate would comply with these regulations.

8.11.2 (9568)
Comment - EIS001888 / 0241
The DEIS fails to examine the likely interaction of the Yucca Mountain Program Federal activities in Nevada. For example, Clark County is non-attainment for National Ambient Air Quality Standards (NAAQS). The DEIS does not analyze the effect construction of the Heavy Haul infrastructure improvements or a rail line will have on the Regional Transportation Plan.

Response
DOE has updated the information on potential impacts of Yucca Mountain transportation activities in Nevada throughout the EIS. For the example cited in the comment, repository activities would cause no air quality impacts to Clark County; potential impacts at the land withdrawal boundary would be small fractions of the National Ambient Air Quality Standards (see Section 4.1.2 of the EIS). Section 6.3 describes potential air quality impacts from transportation-related construction and infrastructure improvements. While portions of Clark County do not comply with National Ambient Air Quality Standards because of vehicular traffic, any Yucca Mountain-related activities would not cause further deterioration of the existing air quality in this area. The three heavy-haul truck route scenarios through the Las Vegas basin evaluated in the EIS assumed that the affected segments of the Las Vegas Beltway would be completed by 2010, the same year shipments would begin under current DOE plans. Because the required construction and infrastructure upgrades on the planned Las Vegas Beltway would be

completed an estimated 10 years before the current estimated completion date of 2020, traffic congestion in the Las Vegas Valley would be improved and the action would complement the Regional Transportation Plan. If DOE selected one of the three heavy-haul truck routes through the Las Vegas basin, it would consult with Clark County on specific impacts to the transportation system caused by the heavy-haul truck route improvements.

8.11.2 (9644)
Comment - EIS001888 / 0309
The DEIS is insufficient because it fails to consider how the Yucca Mountain Program may impact other federally mandated programs that are ongoing in Clark County, Nevada. The best example of this is the issue of air quality. Clark County is nonconforming for Federal air quality standards for both ozone and particulate matter emissions. Construction of rail lines or heavy haul infrastructure proposed in the DEIS will have an effect on air quality in Clark County. It is likely that the Regional Transportation Plan, the Statewide Implementation Plan and Transportation Improvement Program will all be affected by the construction of the infrastructure necessary to support the Yucca Mountain Project. The DOE must establish a provision to perform a conformity analysis for the proposed projects necessary to demonstrate that these construction activities will have no impact on Clark County's air quality. Other federal activities related to the environment, endangered species, flood control and land management must also be addressed by the DEIS.

Response
All of the areas cited in this comment are addressed in Section 4.1.2 of the EIS for the proposed repository and Sections 6.1.1 and 6.1.2 for transportation-related activities. The specific examples noted for air quality are addressed below.

The Las Vegas Air Basin, part of Clark County, is in nonattainment for carbon monoxide and particulate matter (PM_{10}), but is in attainment for ozone. An analysis of the transportation options that specifically focused on carbon monoxide and PM_{10} has been conducted for the EIS (see Chapter 6) and in a separate Clean Air Act conformity review.

Potential air quality impacts from construction of a branch rail line that would cross the Las Vegas Air Basin are addressed in Section 6.3.2.2.5 of the EIS. DOE used comparisons to Clark County's EIS for the northern and western Las Vegas Beltway project to determine there would be no significant impacts to air quality in this area from branch rail line construction.

The potential impacts of the intermodal transfer station that is part of the Sloan/Jean heavy-haul truck implementing alternative are discussed in Section 6.3.3.1 of the EIS. The site of this intermodal transfer station could be in the Las Vegas Air Basin, and thus subject to analysis of air quality attainment status. However, the results of the analyses in Section 6.3.2.1 show that impacts from the construction and operation of the intermodal transfer station would be below the emission threshold rates and, therefore, would meet the requirements for Clean Air Act conformity. Highway upgrades in the Las Vegas Air Basin would not be necessary, so there would be no associated emissions.

In addition, DOE conducted a conformity review to evaluate the potential for air quality impacts of vehicle emissions in the Las Vegas Air Basin arising from transport of materials and personnel for constructing and operating a repository at Yucca Mountain. Because the estimated direct and indirect emissions would be below threshold emission rates for each pollutant of concern established by Environmental Protection Agency regulations (see Section 6.3.3.2.4 of the EIS), DOE determined conformity requirements for the Las Vegas Air Basin would not apply to repository-related transportation activities.

DOE believes that the EIS adequately analyzes the potential for air quality impacts of transportation in the Las Vegas Air Basin. Section 6.3.2.1 of the EIS addresses resource areas common to Nevada branch rail line implementing alternatives and Section 6.3.3.1 addresses those for Nevada heavy-haul truck implementing alternatives. Sections 6.3.2.2 and 6.3.3.2 discuss impacts specific to each Nevada branch rail line or heavy-haul truck implementing alternative, respectively. Once a specific rail corridor or heavy-haul truck route was selected, additional engineering and environmental studies and appropriate National Environmental Policy Act reviews would be conducted, together with consultations with responsible Federal, State, tribal, and local authorities. Mitigative actions would be developed to preclude or compensate for potential impacts.

8.11.2 (9808)
Comment - EIS001888 / 0395
[Clark County summary of comments it has received from the public.]

Several commenters noted that construction and operation of the repository and transportation facilities could degrade current air-quality attainment status (Lincoln and Clark Counties), and that emissions of fugitive dust could impair visibility and reduce the safety of waste transport. Thus, the EIS should describe existing air- quality and meteorological conditions (severity of storms, temperature extremes, fog) in each affected area, and assess the potential environmental consequences to air quality and the extent to which meteorological conditions could affect waste transport.

Response
With the exception of the Las Vegas Valley, all areas of Nevada potentially affected by transportation activities are unclassified and therefore "in attainment" with National Ambient Air Quality Standards. The text in Section 3.1.2.1 has been clarified to specifically note that those areas of Nevada potentially affected by the Proposed Action (including Lincoln County) are unclassified and, therefore, in attainment.

Potential air quality impacts from construction and operations at the repository are described in Section 4.1.2 of the EIS. There would be no impacts to air quality on Lincoln or Clark counties from activities at the repository site. Potential air quality impacts from transportation-related construction and operation are described in Sections 6.3.2 and 6.3.3. If DOE selected the Valley Modified Corridor, which passes through the Las Vegas Valley, for the construction and operation of a branch rail line, the final plans, specifications, and estimates would include the Clark County Health District PM_{10} emissions control measures.

No additional climate description is necessary for those areas where the only potential inputs are related to candidate transportation routes. Any roads that would be considered or designated for transportation of spent nuclear fuel and high-level radioactive waste would have to meet the criteria for safe transportation, meaning that they must be constructed in such a manner to allow for safe transportation considering normal meteorological conditions such as rain, snow, ice, and fog. Normal roadway maintenance such as snow removal can be considered, and in the event of severe meteorological conditions such as a blizzard, trucks could be ordered off the road to wait out such conditions.

8.11.2 (10248)
Comment - EIS002115 / 0010
Weather and natural disasters. Although weather does not seem to be an issue, Mineral County believes it's a big issue. Most of the radioactive waste would be transported through the northern part of Nevada. This part of the state may have bad weather from November to May as well as many other states from east, central and northwest America. Will the radioactive waste be transported during their timeframe? The DEIS does not have adequate information in case of road closures due to inclement weather, nor provide complete information about safe havens or alternate trucks and siting for rail.

Response
The climate along the transportation routes being considered in the EIS was not described because DOE would consider or designate for the transportation of spent nuclear fuel and high-level radioactive waste only those roads that meet the criteria for safe transportation of these materials. Such roads must be constructed in a manner that enables safe transportation considering normal meteorological conditions such as rain, snow, ice, and fog. DOE would purchase services and equipment from Regional Servicing Contractors, who would perform waste acceptance and transportation operations. As described in Section M.3.2.1.4 of the EIS, the Regional Servicing Contractor would obtain route weather forecast information as part of the preshipment planning and notification and shipment process. At the time of departure, current weather conditions would have to be acceptable for safe vehicle operation. Shipments would not travel when severe weather conditions developed along routes or adverse road conditions made travel hazardous. In the event of severe meteorological conditions such as blizzards, trucks could be ordered off the road to wait out such conditions. Similar types of requirements would apply for rail shipments. The appropriate documentation would be prepared on safe havens when a specific route and mode of transportation were selected.

8.11.2 (10886)
Comment - EIS000817 / 0147
P. 6-89. What is the total of pollutants from the total transport of the waste? Here we are trying to cut back on all this, and instead, this project adds to the problem. Are we creating more air hazards to bury a waste?

Response
DOE did not calculate the total quantity of pollutants generated over time from transportation activities and determined that national transportation of spent nuclear fuel and high-level radioactive waste by truck and rail would not constitute a meaningful source of air pollution along the nation's highways and railroads. As noted in Section J.1.3.2.3 of the EIS, human health impacts to vehicle exhaust depend principally on the distance traveled in an urban population zone and on the impact factors for particulates and sulfur dioxide from truck or rail emissions, fugitive dust generation, and tire abrasion. National transportation of spent nuclear fuel and high-level radioactive waste would use existing highways and railroads and would average 14.2 million truck kilometers (8.8 million miles) per year for the mostly truck case and 3.5 million railcar shipments per year from the mostly rail case. The national yearly average for total highway and railroad traffic is 186 billion truck kilometers (116 billion miles) and 49 billion railcar kilometers (30 billion miles) (DIRS 148081-BTS 1999). Therefore, the transport of spent nuclear fuel and high-level radioactive waste would represent 0.008 percent and 0.007 percent of truck and railcar-kilometers traveled, respectively.

8.11.2 (11008)
Comment - EIS001896 / 0006
Section 3.2.2.1.2

The Valley-Modified Rail Corridor crosses Clark County, which could impact PM_{10} attainment.

Response
Section 6.3.2.1 of the EIS provides a summary discussion of the Conformity Review of the Nevada Rail Implementing alternatives for PM_{10}. Part of this Conformity Review evaluates PM_{10} emissions in the Las Vegas nonattainment area. A significant portion of PM_{10} emissions in the nonattainment area are the result of construction activities (DIRS 155557-Clark County 2001). The Valley Modified Corridor would require construction within the nonattainment area. DOE has made quantitative estimates of PM_{10} releases from rail-line construction, based on the limited amount of information available. These PM_{10} releases would include the emissions from disturbing the ground and from fuel combustion of the construction equipment. Dust abatement measures (for example, water applications) are assumed to reduce fugitive dust PM_{10} emissions by 70 percent. Given these assumptions, PM_{10} emissions during the construction phase of the Valley Modified Corridor are estimated to be up to 190 percent [120 metric tons (130 tons) per year] of the General Conformity threshold level for a PM_{10} serious nonattainment area, 64 metric tons (70 tons) per year (40 CFR 93.153). This value could be reduced by lengthening the construction time, extremely diligent attention to dust suppression measures, or more detailed task planning to reduce the sources of particulate emissions. Valley Modified Corridor emissions into the nonattainment area would occur during the much longer operations phase, as locomotives passed through the nonattainment area on their way to the Yucca Mountain site. The operations emissions of PM_{10} for the Valley Modified Corridor were estimated to be less than 3 percent of the General Conformity threshold levels. In addition, the Conformity Review compared the PM_{10} release estimates to the Nevada PM_{10} State Implementation Plan's (DIR 155557-Clark County 2001) estimated annual [154,788 metric tons (170,625 tons) per year (2001 estimate)] and daily [653 metric tons (719.78 tons) per year (2001 estimate)] inventories of PM_{10} for the nonattainment area. The Valley Modified Corridor PM_{10} emissions estimates are less than 0.08 percent of these inventories during construction.

8.11.2 (11009)
Comment - EIS001896 / 0007
Section 3.2.2.2.2

The Sloan/Jean Intermodal Transfer Station could impact PM_{10} attainment.

Response
Section 6.3.3.1 of the EIS discusses potential impacts from constructing and operating an intermodal transfer station that could be part of the Sloan/Jean heavy-haul truck implementing alternative. Implementation of this

implementing alternative could result in an intermodal transfer station in the Las Vegas Air Basin. Tables 6-83 and 6-84 of the EIS lists annual criteria pollutant releases from constructing and operating an intermodal transfer station over 24 years. The results of the analyses discussed in Section 6.3.3.1 demonstrate that the PM_{10} emissions from construction and operation of the intermodal transfer station would not exceed General Conformity threshold levels for areas such as the Las Vegas Valley, which is classified as a serious nonattainment level.

8.11.2 (13187)
Comment - EIS010243 / 0034
The EPA [Environmental Protection Agency] issued transportation conformity regulations on Nov 24, 1993 to implement section 176(c)(4) of the Clean Air Act as amended. The transportation conformity regulations apply to actions of the FHWA [Federal Highway Administration] and FTA [Federal Transit Administration]. Actions of other federal agencies, including other transportation agencies are covered by the general conformity regulations issued by the EPA on November 30, 1993. The DOE is covered by these general conformity regulations.

The Las Vegas Valley is classified by the U.S. Environmental Protection Agency as a serious non-attainment area for carbon monoxide (CO) and particulate matter (PM_{10}). The Clark County Regional Transportation Commission is responsible for establishing CO and PM_{10} emissions and for demonstrating conformity. Because Clark County is a non-attainment area for air quality emissions, the pollutants generated by the NPA are of concern. Air quality impacts are important to Clark County for regulatory purposes that are not considered in the SDEIS. The construction and operation of NPA transportation facilities effects the ability of Clark County to meet national air quality standards. Failure to meet these standards will harm Clark County's ability to obtain Federal funding for transportation facilities and will generally harm the quality of life in Clark County.

Vehicular emissions are the primary source of CO pollutants, whereas construction activities are the primary source of dust (PM_{10}) in the Valley. In addition to vehicle miles of travel, congestion is a significant contributor to increased CO emissions.

Projected carbon monoxide emissions calculated by the Regional Transportation Commission for the projected roadway types, travel speed characteristics, and emission factors using the Mobile 5b model are:

Facility Type Major Arterial (four lane)
Posted Speed 45 mph
Free Flow Speed 45 mph
Average Travel Speed 35 mph
Congested Speed 20 mph

Figure 3 Uncongested Travel Speed Characteristics and Carbon Monoxide Emissions

45 mph 4.87 grams/mile
35 mph 6.82 grams/mile
20 mph 13.51 grams/mile

Figure 2 Emission Factors and carbon dioxide emission factors

These emission factors are used to calculate the amount of air quality impact on Clark County attributable to the YMP [Yucca Mountain Project].

The emissions for the construction phase air quality impact cannot be calculated because not enough information is provided by the SDEIS on the vehicle trips required to construct and operate the facility. During the operational phase of the NPA there will be significant air quality problems. The impacts on air quality due to legal-weight truck shipments will be very substantial. The results of the analysis are presented below.

Pollutants Truck Air Quality Impacts
CO2 48,213,000
PM10 47,223,000

Figure 3 Total Grams of Air Pollutants During the Operational Phase

The cumulative impacts due to the shipment of LLW [low-level radioactive waste] to the NTS [Nevada Test Site] are assumed to be the emissions from the legal-weight trucks that will traverse the valley en route to the NTS. Because these shipments take place on the region's freeways, the emission factors for higher speeds are used. The cumulative impacts of LLW transportation are below.

Air Quality Impact Cumulative Impacts
CO2 182,274,840
PM10 869,450,987

Figure 4 Cumulative Air Quality Impacts

The air quality impacts due to the YMP [Yucca Mountain Project] will substantially degrade Clark County's air quality. They will make it increasingly difficult for local government to meet air quality goals and could cause other Federal agencies to take punitive action on Clark County due to the YMP. The NPA should have been prepared to accommodate the regional transportation plans and conform to the FHWA's [Federal Highway Administration] regulations for statewide planning.

Response
DOE agrees with the Clark County Regional Transportation Commission comment that the Las Vegas Valley is classified by the Environmental Protection Agency as a serious nonattainment area for carbon monoxide and particulate matter less than 10 micrometers in diameter (PM_{10}). Section 6.3 of the EIS describes the impacts of these emissions and other listed pollutants from cars, trucks, rail, and other conveyance vehicles that would travel through the Las Vegas Valley and construction activities within the Valley. In Appendix J of the EIS, DOE states that it has developed the transportation conformity documentation to demonstrate that carbon monoxide and particulate matter emissions would not hinder the Las Vegas Valley in their efforts to meet national ambient air quality standards. DOE has recognized the carbon monoxide and PM_{10} State Implementation Plans in the EIS and would abide by the requirements of the plan in any actions taken following a decision to proceed with the repository and related transportation program.

DOE has converted the results of the analyses performed by the Clark County Regional Transportation Commission, as presented in the comment, to the units used in the Carbon Monoxide State Implementation Plan (Table 8-3) (DIRS 156706-Clark County 2000) and determined the percent of 2000 "daily budget" that they would represent. For legal-weight trucks transporting spent nuclear fuel and high-level radioactive waste, the 48,213,000 grams of carbon monoxide emissions during the repository operation period (24 years) would be 0.0029 percent of the "daily budget" for on-road mobile sources. For legal-weight trucks transporting low-level radioactive waste to the Nevada Test Site, the 182,274,840 grams of carbon monoxide emissions during the same period would be 0.011 percent of the "daily budget".

DOE converted the results of the analyses performed by the Clark County Regional Transportation Commission, as presented in the comment, to the units used in the Particulate Matter (PM_{10}) State Implementation Plan (Table 3-8) (DIRS 155557-Clark County 2001) and determined the percent of 2001 "annual inventory" that they would represent. For legal-weight trucks transporting spent nuclear fuel and high-level radioactive waste, the 47,223,000 grams of PM_{10} emissions during the repository operation period (24 years) would be 0.0027 percent of the "annual inventory" for on-road mobile sources. For legal-weight trucks transporting low-level radioactive waste to the Nevada Test Site, the 869,450,987 grams of PM_{10} emissions during the same period would be 0.051 percent of the "annual inventory." Note that the transportation of low-level radioactive waste to the Nevada Test Site is not part of the proposed Yucca Mountain Repository action but would be a cumulative impact under the National Environmental Policy Act going on at the same time in the same area as the proposed action. Cumulative impacts, including the transportation of low-level radioactive waste to the Nevada Test Site, are given in Chapter 8 of the EIS.

It is DOE's opinion that these potential air quality impacts would be very small and that adequate information on potential air quality impacts of transportation of spent nuclear fuel and high-level radioactive waste, including cumulative impacts, is provided in the EIS to support current decisionmaking.

8.11.3 HYDROLOGY/GEOLOGY

8.11.3 (3019)
Comment - EIS000593 / 0004
Mineral County's flood plain map is incorrect. If this is so, how reliable is the information gathered for Yucca Mountain and other areas?

Response
DOE has added more information to the floodplain/wetland assessment in Appendix L of the EIS to address flooding along candidate Nevada transportation routes. Appendix L now identifies 100-year flood zones that the rail corridors and their alternative alignment segments would cross, based on information from the Federal Emergency Management Agency.

The EIS does not, however, show or discuss floodplain areas in Mineral County, because none of the rail corridors or heavy-haul truck routes under consideration in the EIS pass through Mineral County.

8.11.3 (3020)
Comment - EIS000593 / 0005
The flood plain report in the DEIS is too generalized. Mineral County would like to have a detailed flood plain analysis done of Yucca Mountain and each affected county.

Response
The floodplain/wetland assessment in Appendix L of the EIS examines the effects to floodplains and wetlands of the construction of a branch rail line or intermodal transfer station, along with its associated route for heavy-haul trucks to Yucca Mountain. Appendix L compares the impacts from construction on the floodplains/wetlands along the candidate rail corridors, and at candidate intermodal transfer stations and associated heavy-hail truck routes. The assessment does not evaluate potential effects along existing routes because such roads should be designed to meet 100-year floodplain design specifications. For the Final EIS, DOE selected rail as the preferred mode of waste transport to the repository. A more detailed floodplain/wetland assessment of the rail alignment in Nevada would be conducted.

8.11.3 (4197)
Comment - EIS001160 / 0015
White Pine County has recently adopted a plan for managing the abundant and high-quality surface and ground water resources which characterize the area. Said plan envisions significant portions of these waters being put to beneficial use by way of beverage bottling to meet an ever-growing demand for beverages in the Western United States. The DEIS does not reference the White Pine County Water Resources Management Plan nor the potential for transportation of radioactive wastes through the County to stigmatize area water resources.

Response
If the repository was to be approved, and if a mode and route to transport waste through Nevada were selected, DOE would conduct additional detailed field surveys, government consultations, analyses, and appropriate National Environmental Policy Act reviews. If any waste-transport route could affect White Pine County, the Water Resources Management Plan for the County would be examined, along with other county-specific information on the physical, biological, cultural, and socioeconomic conditions in the County.

During scoping for the EIS, DOE received comments on the need to address perception-based and stigma-related impacts. DOE considered these issues and was guided by the results of its own research and those of the State of Nevada, and by relevant conclusions reached by reviews of this subject matter by the Nuclear Waste Technical Review Board (an independent board established by the Nuclear Waste Policy Act of 1982) in 1995 and other researchers up through about 1997. During preparation of the Draft EIS, DOE concluded that analysis of perception-based or stigma-related impacts would be uncertain or speculative at best and thus would not have been meaningful in the context of the EIS. Therefore, DOE addressed, but did not quantify, whether or how individual members of the public, or the public collectively, could or would respond to the perception of risk, whether or not this risk was real.

For this Final EIS, however, DOE elected to reexamine the relevant literature and the state of research into perception-based impacts and stigma effects. DOE reevaluated the independent reviews conducted by the Nuclear Waste Technical Review Board and the State of Nevada, among others, and identified and assessed relevant studies that have been published in the interim. DOE has concluded that while there might be a modest relationship between negative perceptions and human behaviors that could adversely affect the local economy, there are no known analytical methods by which the occurrence, timing, and extent of such impacts can be accurately predicted as they relate to the transportation or disposal of radioactive materials.

8.11.3 (5539)
Comment - EIS001660 / 0041
The DEIS fails to adequately disclose the impacts of the proposed action on water and water rights (pp. 6-10,-36,-61,62). The State Engineer oversees use of waters of the State of Nevada for the long-term benefit of residents. Given the and climate and the scarcity of surface water resources, the quality and quantity of groundwater are particularly important to Mineral County and the state as a whole. The DOE must consult the State Engineer to determine whether the utilization of groundwater from wells in the Nevada affected counties (p. 6-10) would be consistent with the water laws of the State of Nevada, affect the water rights of the existing holders of such rights, or affect the cost of water for domestic and agricultural use. The DEIS must also disclose the risk to groundwater resources that could be affected by a radiological accident and hazardous waste discharge associated with the proposed action on any surface transportation route. The DEIS must describe the permitting, construction, and closure of the wells, and any environmental impacts (i.e., impacts caused by drilling muds).

Response
Section 3.1.4.2.1 of the EIS summarizes the status of water usage and appropriations in the region of the proposed repository. The EIS recognizes that there are large water appropriations in surrounding areas such as Oasis Valley, Crater Flat, and Amargosa Desert, compared to estimates of the amount available (the perennial yield), but that the actual amounts withdrawn are much lower. With regard to areas of the State that candidate transportation routes would cross, the EIS does not present the level of detail it does for the repository area. However, Sections 3.2.2.1.3.2 and 3.2.2.2.3.2 identify each groundwater basin or hydrographic area that each rail corridor and heavy-haul truck route would cross and that the State classifies as "designated groundwater basins." These are the areas where permitted water rights approach or exceed the estimated perennial yield and where the water resources are depleted or require additional administration by the State. The analyses performed for Chapter 6 indicate that impacts to water resources along the transportation routes would be minor and, with respect to groundwater, would be limited to the possibility of withdrawing water. In addition, Chapter 6 discusses the options available to DOE to obtain water for construction activities. If water was unavailable in one area of the corridor or route, DOE could consider alternative areas and means for getting water. Chapter 6 discusses the fact that the quantities of water and the duration of the need would be relatively small for construction.

The level of detail required to obtain a water appropriation permit is not required for this EIS, but DOE has identified the requirement as being applicable to the project. Section 11.2.2 of the EIS identifies Nevada Statutes related to water and water quality that would be applicable to the Proposed Action. These statutes address the water appropriation process and licensing requirements for drilling, construction, and plugging of wells.

With respect to the evaluation of transportation accidents, the EIS does not consider possible impacts to groundwater resources because DOE believes the scenario of contaminants reaching groundwater does not represent a realistic contributor to exposures from a transportation accident. Accident scenarios evaluated in the EIS assume releases of radionuclides from the transportation cask.

The predominant threats to human health from a transportation accident, and those considered in the EIS analysis, would be exposures that occurred relatively quickly before the start of controls and countermeasures. Exposure pathways considered in the accident evaluations were associated with people close to the release (direct exposure) or exposed to materials in the air (gases and particulates). Exposure to airborne materials includes inhalation of and direct exposure to a passing cloud of contaminants, direct exposure to materials deposited on the ground, and inhalation of materials resuspended from the ground by wind. Ingestion from contaminated crops is an exposure pathway for accidents in rural areas. DOE believes that these acute exposures present a conservative estimate of the risks associated with a serious transportation accident. Contamination of groundwater and subsequent exposure of people to that groundwater would be a long-term chronic condition, and it would include assumptions of the

availability of a contaminant migration pathway and a long period of inaction with respect to responding to the accident release. DOE believes such assumptions are not realistic and, even if they were included in the evaluations, the exposures would be minor in comparison to the acute exposures that are included. Section J.1.4.2 of the EIS contains more information on transportation accident scenarios.

8.11.3 (5601)
Comment - EIS001887 / 0227
Page 4-24; Section 4.1.3.2 - Impacts to Surface Water from Construction, Operation and Monitoring, and Closure

The statement "If DOE selected a rail corridor or heavy-haul route..." should be changed to "When a rail corridor or heavy-haul route is selected...." Also, wouldn't NEPA [National Environmental Policy Act] documents other than a floodplain/wetlands assessment be required?

Response
DOE believes that the EIS text is appropriate because: (1) the mostly legal-weight truck scenario described in the EIS is still a viable option; and (2) more importantly, if the proposed repository action did not go forward, there would be no need to select a transportation corridor or route.

Section 4.1.3.2 of the EIS deals with potential impacts to surface waters from repository construction, operation and monitoring, and closure, so discussion of the floodplain/wetlands assessment (Appendix L) is appropriate. This is not an appropriate section to discuss other National Environmental Policy Act-type documents or assessments. As stated in the EIS (Chapter 6), DOE would conduct more detailed field surveys, government consultation, analyses, and appropriate National Environmental Policy Act reviews before deciding on a specific route.

8.11.3 (7225)
Comment - EIS001337 / 0098
Page 3-130 The text here implies that heavy-haul routes are in proximate parallel location to flowing surface waters. This is not the case at all. In most cases, these routes are 800 or meters from any flowing surface water, except for the occasional spring. Additional field work and revision to this section is needed.

Response
The text on the cited page that appears to fit this comment is in the discussion of the candidate Caliente-Las Vegas heavy-haul truck route. The opening paragraph of this discussion states, "From Crystal Springs to Las Vegas, the route parallels the White River through Pahranagat Valley, and then through Coyote Springs…." This statement does not imply anything about the nature of the White River or its proximity to the route (U.S. Highway 93), only that the highway and the river both head southward through the Pahranagat Valley. The White River flows only intermittently over much of its length. The important issue with respect to the White River in this area is that flow from Ash Springs is toward the White River channel and that U.S. 93 crosses the flow from the spring in the area between the spring and the river. Section 3.2.2.2.3.1 of the EIS identifies Ash Springs as a water resource associated with the Caliente-Las Vegas route, and Section 3.2.2.2.4 discusses biological resources, including the endangered White River springfish that occurs in the Ash Springs flow.

Before selecting a specific rail alignment in a corridor, the Department would conduct additional consultations, field surveys, analyses of water and biological resources, and appropriate National Environmental Policy Act reviews.

8.11.3 (7901)
Comment - EIS001653 / 0051
Section 3.2.2.1.3.1 contains two small paragraphs and a table of surface waters for alternative rail corridors. This section needs to have maps which show the location of surfaces waters in relationship to corridors, flow and discharge information, uses of the water permitted or otherwise, and flood plain information, and information on recharge.

Response
Sections 3.2.2.1.3.1 and 3.2.2.2.3.1 of the EIS include tables that identify surface-water features near the candidate Nevada transportation routes. The tables identify water resources along route segments to provide a general idea of the location of water resources. In addition, the discussion of heavy-haul truck routes identifies flood zones in areas

DOE is considering for the associated intermodal transfer stations. The floodplain/wetlands assessment in Appendix L of the EIS contains additional information on areas of potential flooding along the Nevada transportation routes. Specifically, Appendix L identifies 100-year flood zones that rail corridors cross, based on information from the Federal Emergency Management Agency.

The comparable groundwater discussions in Sections 3.2.2.1.3.2 and 3.2.2.2.3.2 of the EIS include information on recharge estimates. These sections identify each groundwater basin, or hydrographic area, that each rail corridor or heavy-haul truck route crosses, and contain estimates of perennial yield for each area. Perennial yield is the amount of water that can be withdrawn from the basin on an annual basis without adversely affecting the reservoir; it can be considered the average amount of recharge and underflow that reaches the area's groundwater each year.

DOE believes that the amount of detail in the EIS on water resources along alternative rail corridors and heavy-haul truck routes is appropriate. Before selecting a specific rail alignment in a corridor, the Department would conduct additional consultations, field surveys, analyses of water and biological resources, and appropriate National Environmental Policy Act reviews.

8.11.3 (8473)
Comment - EIS000817 / 0145
Can DOE "lease temporary water rights from individuals along the rail corridor?" Do those individuals own the water to give the right to DOE? This needs a great deal of thought. The future is full of water concerns. Just how much water will Nevada lose to DOE in this whole operation of transport and disposal? Water is scarce in Nevada, isn't it? Who uses and needs that water? Are water predictions correct? Who really has the right to give that water to DOE? It almost appears as a threat here to the State of Nevada, saying, "If you don't give us water rights to drill wells, we'll pay off private individuals for rights."

Response
DOE did not intend to sound as if it was making threats when it stated that it could obtain water necessary to support construction of transportation routes from individuals already holding water rights. The Department views this simply as a potentially available option; not to discuss it in the EIS would be contrary to the objective of full disclosure. State statutes, as stated in the *Nevada State Water Plan* (DIRS 155775-NDWP 1999), allow this option: "Water right owners are entitled to buy, sell or trade their water rights to others under free market conditions. However, changes in the point of diversion, or place or manner of use must be approved prior to the change in accordance with the state water law, and state and Federal Court decrees and regulations."

Section 4.1.3.3 of the EIS estimates the amount of water DOE would need to support the repository. Sections 6.3.2.2 and 6.3.3.2 estimates water needs for each rail corridor and heavy-haul truck route, respectively. With respect to the amount of groundwater available in the areas discussed in the EIS, DOE identifies estimates of perennial yield used by the State of Nevada. Because most of the water demand associated with the Proposed Action would occur at the repository, the EIS presents a range of water availability (or perennial yield) estimates for the groundwater basin in that area.

8.11.3 (9794)
Comment - EIS001888 / 0379
[Clark County summary of a comment it received from a member of the public.]

Another commenter requested that the EIS identify sites in Lincoln County for borrow material (chiefly for the railbed) and include geologic and soil maps for all potentially impacted areas in Lincoln County.

Response
DOE has examined information from the Natural Resource Conservation Service to determine if the candidate rail corridors would cross prime farmlands and to identify potential serious engineering constraints caused by soil conditions. DOE did not include the level of geologic and soil data requested by the commenter for several reasons. The Department believes that most variations in soil and geologic conditions in a rail corridor or along a heavy-haul truck route would primarily present construction and cost issues rather than environmental issues. If unique resources (water, cultural, biological, etc.) are associated with a type of geology or soil, the EIS discussion is in terms of those resources rather than the type of geology or soil.

DOE agrees that site-specific information on geology and soils would be necessary before the construction of a branch rail line or road upgrades to support heavy-haul truck shipping. As stated in Chapter 6 and Section 11.2.2 of the EIS (subsection on Compliance with Floodplain/Wetlands Environmental Review Requirements), more detailed field surveys, government consultation, analyses, and appropriate National Environmental Policy Act reviews would be prepared if a decision was made to select a specific rail alignment within a corridor or a specific location of an intermodal transfer station or the need to upgrade the associated heavy-haul truck routes. These would include consultations with State wildlife management agencies, the Bureau of Land Management, the Army Corps of Engineers, and other applicable government agencies. They also would include field surveys (as applicable) and more detailed assessments and analyses of wetlands and other waters; floodplains; sensitive species; soils; and other related issues.

With regard to the commenter's request that the EIS identify potential sites for borrow material, DOE believes that this information would be of little value at this stage of the project. For a rail corridor, the normal design process would include an effort to lay out track elevations such that excavation and borrow quantities are roughly equal. This would minimize the amount of new material DOE would have to bring to the construction site. In addition, it assumes that excavated material would be suitable for fill. However, the design has the flexibility to control where borrow material is needed along the corridor, if at all. During construction of a branch rail line, it would be fairly easy to get borrow materials to the construction area. That is, the fact that the project consists of building a railroad greatly enhances the ability to bring in construction materials. A review of geologic and soil maps could help identify potential borrow sites, but until the repository project enters a more detailed rail-design process, such an effort would not provide meaningful information to support current decisionmaking. As stated in the Overview to the Summary:

"DOE believes that the EIS provides the environmental impact information necessary to make certain broad transportation-related decisions, namely the choice of a national mode of transportation outside Nevada (mostly rail or mostly legal-weight truck), the choice among alternative transportation modes in Nevada (mostly rail, mostly legal-weight truck, or heavy-haul truck with use of an associated intermodal transfer station), and the choice among alternative rail corridors or heavy-haul truck routes with use of an associated intermodal transfer station in Nevada…Other transportation decisions, such as selection of a specific rail alignment within a corridor, would require additional field surveys, State and local government and Native American tribal consultations, environmental and engineering analyses, and appropriate National Environmental Policy Act reviews."

8.11.3 (9803)
Comment - EIS001888 / 0390
[Clark County summary of comments it has received from the public.]

Commenters stated that the EIS must fully describe the existing environment (wells, springs, drinking and agricultural water sources including the Humboldt River, depth to groundwater, water quantity and quality, spring-discharge rates), and examine possible impacts to these resources from construction and operation of regional transportation facilities and the repository, including acts from repository failure.

Response
DOE believes that the EIS adequately addresses the baseline environmental conditions mentioned in the comment in Chapters 3 and 6 of the EIS. There are no permanent bodies of surface water in the immediate vicinity of the proposed repository, as described in Section 3.1.4.1. On a regional basis, Section 3.1.4.1 describes significant areas of spring discharge, particularly those in the Ash Meadows area. Discussions of groundwater in the region of the repository (see Section 3.1.4.2) include depths to the water table, direction of flow, water quality, water-use rates, and water appropriations.

The EIS does contain less detail for the alternative rail corridors and heavy-haul truck routes compared to the repository site. DOE believes that areas over which transportation routes would cross are much less susceptible to environmental impacts because of the safety of the shipping casks. As stated in Chapter 6 of the EIS, DOE would conduct more detailed field surveys, government consultation, analyses, and appropriate National Environmental Policy Act reviews before deciding on a specific route. However, the information in the EIS does present a broad overview of existing surface-water (springs, creeks, reservoirs, riparian areas, etc.) and groundwater conditions along the rail corridors and heavy-haul truck routes. Groundwater conditions are described in terms of the basins

that the route would cross, their perennial yields, and whether the State considers them "designated groundwater basins." Designated basins are areas where permitted water rights approach or exceed the estimated perennial yield and the water resources are being depleted or require additional administration by the State.

With regard to the evaluation of potential impacts to water resources from construction and operation of regional transportation facilities and the repository, DOE believes that the scope of analysis in the EIS is consistent with the concern expressed in the comment. Sections 6.3.2 and 6.3.3 of the EIS discuss potential impacts to water resources in areas along rail corridors and heavy-haul truck routes, respectively. Section 4.1.3 addresses environmental impacts to water resources from the construction, operation and maintenance, and closure of the proposed repository. Chapter 5 addresses the long-term performance of the repository. A major element of Chapter 5 is the projection of potential impacts associated with the eventual failure of waste packages (over tens of thousands to hundreds of thousands of years) where migration of contaminants to and through groundwater would be the primary mechanism of exposure to the environment. Section 5.7 discusses disruptive events such as earthquakes and volcanic activity that could disturb the repository. The conclusion of the analysis, even with disruptive events, is that repository impacts would not exceed standards established for protection of health and safety and the environment.

8.11.3 (11150)
Comment - EIS000692 / 0006
Also, so far I find no mention in the DEIS that Lincoln County water drains into the Colorado River system, water which is used, haggled and fought over, with five western states.

Response
DOE recognizes that water is a valuable and scarce resource in southern Nevada. Because of the limited amount of surface water along the candidate Nevada transportation routes, the EIS analyses assumed that water to support the construction of a transport route would come from groundwater resources. Accordingly, the EIS discusses the potential to affect local surface water through activities such as disturbing flow, increasing sedimentation, or releasing contaminants; the discussion of groundwater includes more regional concerns such as availability over entire groundwater basins. The EIS identifies the groundwater basins, or hydrographic areas, over which rail corridors or heavy-haul truck routes would pass and which the State classifies as "designated groundwater basins." These are areas where permitted water rights approach or exceed the estimated perennial yield and where water resources are being depleted or require additional administration by the State. In discussing the more regional issues associated with groundwater, the EIS (Section 3.2.2.2.3.2) recognizes that the site of the intermodal transfer station under consideration near Caliente is in the Colorado River Basin.

8.11.3 (12453)
Comment - EIS001337 / 0032
The County [Lincoln] and City [Caliente] recommended that they include a description of wells and springs within Lincoln County hydrographic basins potentially hosting repository system construction activities, including rail or highway improvements. DOE was encouraged to include in said description depth to groundwater, flow attributes of existing springs, and existing water quality. While the DEIS Affected Environment section does address surface and groundwater conditions along candidate transportation corridors in Lincoln County, the baseline data is not sufficient to enable conclusions about impact to hydrologic resources to be derived. For example, despite a request by the County and City for said information be included in the document, the DEIS does not describe depth to groundwater, flow attributes of potentially impacted springs or existing water quality of potentially impacted water resources.

During scoping, the County and City suggested that surface hydrology might impair safe transport and/or handling of radioactive wastes and might be significantly altered by construction activities. The County and City recommended that for all areas within Lincoln County potentially impacted by repository system construction and operations (including transportation), mapping of surface hydrology and estimates of baseline flows should be included within the DEIS. The DEIS section on Affected Environment does not include any description of existing surface hydrologic conditions (particularly estimates of the duration and intensity of peak flows) within Lincoln County. This is despite the fact that the DEIS does attempt to describe potential hydrologic impacts of transportation in Lincoln County (Section 6 of EIS).

Response
The EIS identifies surface-water resources along the candidate rail corridors and heavy-haul truck routes (see Sections 3.2.2.1.3 and 3.2.2.2.3 of the EIS, respectively). The description in Section 3.2.2.2.3 of the Caliente sites DOE would consider for an intermodal transfer station includes a discussion of the candidate locations in relation to 100- and 500-year flood zones of Meadow Valley Wash. The floodplain/wetlands assessment in Appendix L of the EIS contains additional information on potential flooding areas along the Nevada transportation routes. Specifically, Appendix L identifies 100-year flood zones that rail corridors and their alternative alignment segments would cross, based on information from the Federal Emergency Management Agency. However, as noted in the EIS, these maps provide only limited coverage for Lincoln County.

DOE believes that the amount of detail in the EIS on water resources along candidate rail corridors and heavy-haul truck routes is appropriate. However, as stated in the EIS in Chapter 6 and Section 11.2.2 (subsection on Compliance with Floodplain/Wetlands Environmental Review Requirements), more detailed field surveys, government consultation, analyses, and appropriate National Environmental Policy Act reviews would be prepared if a decision was made to select a specific rail alignment within a corridor or a specific location of an intermodal transfer station or the need to upgrade the associated heavy-haul truck routes. These would include consultations with State wildlife management agencies, the Bureau of Land Management, the Army Corps of Engineers, and other applicable government agencies. They also would include field surveys (as applicable) and more detailed assessments and analyses of wetlands and other waters; floodplains; sensitive species; and other related issues.

8.11.4 BIOLOGY AND SOILS

8.11.4 (42)
Comment - 7 comments summarized
The Draft EIS does not adequately address the impacts of development of a rail line or heavy haul route on springs, streams, and other waters; floodplains; wetlands; groundwater resources; soils; native vegetation; spread of noxious weeds; risk of wildfire; game and nongame wildlife habitat and migration; loss of hunting revenue; and wild horses and burros. The EIS should include a detailed inventory of the biological and surface-water resources along the potential routes and conduct a species- and site-specific analysis of impacts, particularly if DOE wishes to decide among rail corridors or heavy-haul truck routes.

Response
The *Environmental Baseline File for Biological Resources* (DIRS 104593-CRWMS M&O 1999, all) includes descriptions and maps of springs, riparian areas, and other potential wetlands; game habitat and migration corridors; sensitive species; and wild horse and burro herd management areas within 5 kilometers (3 miles) of the transportation alignments and routes considered within Nevada. Sections 3.2.2.1.3, 3.2.2.1.4, and 3.2.2.2.4 and associated tables of the EIS highlight the biological resources close to the corridors and routes that are most likely to be affected by Nevada transportation activities. Impacts on those resources are discussed in Chapter 6. DOE agrees with the commenters that site-specific information would be necessary prior to construction of a branch rail line or road upgrades to support heavy-haul truck shipments. However, DOE believes that the EIS provides sufficient information on impacts to biological resources to make informed decisions regarding the basic approaches (for example, mostly rail or mostly truck shipments), as well as the choice among alternative transportation corridors and routes in Nevada. If the site was approved, DOE anticipates that the project plan and design will continue to evolve, creating additional opportunities for mitigation and potentially eliminating the need for some mitigation measures currently under consideration. Section 9.1.1 (and subsequent sections in Chapter 9) describes DOE's initial list of commitments available at this time and identifies DOE-determined impact reduction features, procedures and safeguards and mitigation measures under consideration for inclusion in the project plan and design. Chapter 9 identifies ongoing studies that could influence mitigation measures related to the project plan and design.

As noted in Chapter 6 and Section 11.2.2 of the EIS, if a repository was to be constructed at Yucca Mountain, more detailed field surveys, government consultations, analyses, and appropriate National Environmental Policy Act reviews would be conducted with regard to the transport of waste to Yucca Mountain. These activities would include consultations with State wildlife management agencies, the Bureau of Land Management, the Army Corps of Engineers, and other applicable government agencies. They also would include field surveys (as applicable) and

more detailed assessments and analyses of wetlands and other waters; floodplains; sensitive species; effects of habitat fragmentation, interruption of movements, mortality, and harassment on wildlife, horses, and burrows; loss of hunter-generated revenue, spread of noxious weeds, and soils.

8.11.4 (1412)
Comment - EIS000355 / 0007
We have renewable resources, as well, which will be probably destroyed for years and years and years to come.

Response
As discussed in Section 10.1.3.4 of the EIS, DOE expects limited short- or long-term impacts to renewable biological resources. Vegetation and wildlife would be lost from small areas that DOE would develop for the repository or for transportation routes. Long-term impacts would be related to maintenance of the routes and to the repository. Over the long term, destruction of any resource would be unlikely to be more significant than impacts from original construction. If a specific road or rail route was proposed, DOE would consider specific mitigation measures to avoid or minimize adverse impacts to biological resources in additional National Environmental Policy Act documentation.

8.11.4 (5568)
Comment - EIS001887 / 0197
Page 3-100; Section 3.2.2.1.1 - Land Use and Ownership

The region of influence for biological resources is also too narrowly defined. Habitat outside the corridor is considered in the regional of influence only if that habitat is disturbed by rail line construction and operations. Several of the corridors cross or pass near to crucial big game habitat. Human activity is known to reduce the value of crucial habitat, particularly crucial winter habitat. Frequent trains passing through or near to crucial habitat could significantly reduce the value of that habitat even though the habitat was not physically "disturbed" by construction or operation. The region of influence for biological resources should include all habitat potentially affected, not just disturbed, by construction and operation of the rail line (Note: This same discussion applies to the intermodal transfer station and heavy-haul routes.)

Response
Lists of the threatened and endangered species, sensitive species, game habitat, springs, and riparian areas known to occur within 5 kilometers (3 miles) of rail corridors have been added to Section 3.2.2.1.4 of the EIS. Sections 6.3.2.1 and 6.3.2.2 have been modified to better describe the impacts to biological resources within 5 kilometers of the corridors.

The region of influence for heavy-haul truck implementing alternatives remains as habitat that would be disturbed, and the EIS only lists and discusses biological resources within 400 meters (0.25 mile) of the heavy-haul truck routes and intermodal transfer station. This region of influence was not changed because highway construction would occur on and adjacent to existing roads and therefore should have no additional effect on biological resources distant from those roads. An intermodal transfer station would not be large enough to disrupt movements or otherwise affect distant biological resources. Section 6.3.3.1 of the EIS has been modified to clarify DOE's conclusion about the lack of impacts to biological resources distant from heavy-haul truck routes or intermodal facilities.

8.11.4 (5905)
Comment - EIS001622 / 0024
Need for Complete Description and Analysis of Impacts on Wildlife, Natural Habitat and Public Use Parks

The California State Park system includes 265 park units encompassing 1.4 million acres within which the State is responsible for preserving representative samples of the extraordinary natural and cultural resources and biological diversity of our State. Along these routes is approximately half of California's park units including State parks, State historic parks, State beaches as well as National parks. The EIS should evaluate the potential impacts along

shipment corridors to fish and wildlife populations, natural habitat, and public parks in California, as well as proposed mitigation measures to offset these impacts.

There is no discussion in the DEIS of potential long-term adverse impacts to animals and plants. All of the DEIS' long-term evaluations are based on human health considerations. The DEIS makes the faulty assumption that the few predicted latent cancer fatalities from the proposed project will result in no impacts on the aquatic, wildlife, and plant populations that are dependent upon the water resources potentially affected by the project. These natural populations have taken tens of thousands to millions of years to adapt to their current habitats. These time scales should be considered in determining potential impacts to these populations.

Further, transportation routes could potentially impact habitat for threatened or endangered species. The DEIS should include a description of transportation routes, including road or rail construction or improvements in California, and impacts to species identified as of concern. (See the attached letter from the California Department of Fish and Game.) For example, desert bighorn sheep in California could be adversely impacted by potential transportation corridors in the Death Valley region. Bighorn sheep movement, and consequently their ability to forage for food and reach water sources, could be severely impacted by the construction of new highways, railroads, or road improvements that include barriers or fences.

Recommendation: The DEIS should provide a complete description and analysis of potential transportation impacts on wildlife, natural habitat and public use parks.

Response
DOE does not plan to modify existing public highways or rail lines in California or elsewhere outside Nevada that would be used to transport materials, personnel, or shipments of spent nuclear fuel and high-level radioactive waste to Yucca Mountain. The only potential impacts to parks in California would be those described and analyzed in Sections 6.2.3 of the EIS for incident-free transportation and 6.2.4 for potential accidents. These activities would not further fragment habitat for bighorn sheep or other wildlife in California and additional information on those routes, therefore, is not necessary.

The potential long-term adverse impacts of the Proposed Action are analyzed in Section 5.9 of the EIS. DOE did not assume that relatively few predicted latent cancer fatalities would result in no impacts to aquatic, wildlife, and plant populations. Instead, DOE based its conclusion on the results of calculations that estimated dose rates would be less than 100 millirad per day. The International Atomic Energy Agency concluded that chronic dose rates of less than 100 millirad per day are unlikely to cause measurable detrimental effects in populations of even the more radiosensitive species in terrestrial ecosystems (DIRS 103277-IAEA 1992).

8.11.4 (5946)
Comment - EIS001622 / 0049
The Department commented on the Site Characterization Plan (SCP) on March 23, 1989, and those comments are hereby incorporated by reference. In addition, the Amargosa nitrophila, Nitrophila mohavensis, a plant species listed as Endangered by both the State of California and U.S. Fish and Wildlife Service, should be included on the list of species contained in the March 23, 1989 letter. [Text of March 23, 1989, memorandum follows.]

The Department of Fish and Game has reviewed the U.S. Department of Energy's Site Characterization Plan (SCP) for the proposed Yucca Mountain, Nevada, high-level nuclear waste repository. The SCP describes the detailed studies that will be performed to determine the suitability of the site for nuclear waste disposal, and the potential environmental impacts of construction and operation of the repository. The Department is interested in the SCP because of potential impacts the waste repository could have on water supplies for California fish and wildlife populations in and near Death Valley National Monument.

The Death Valley area is one of the most arid regions in North America. Perennial water supplies in the region are available only where groundwater surfaces in springs or short reaches of streams. Many fish and wildlife species are

totally dependent on the unique habitats that these isolated water supplies provide. Some of these species occur nowhere else on earth. The Department is particularly interested in the following species:

Amargosa pupfish:	*Cyprinodon nevadensis amargosae*
Saratoga Springs pupfish:	*Cyprinodon nevadensis nevadensis*
Salt Creek pupfish:	*Cyprinodon nevadensis salinus*
Cottonball Marsh pupfish:	*Cyprinodon salinus milleri*
Shoshone pupfish:	*Cyprinodon nevadensis shoshone*
Amargosa vole:	*Microtus californicus scirpensis*
Saratoga Springs Belostoman bug:	*Belostoma saratogae*

In addition, two as yet unclassified forms of Amargosa speckled dace (Rhinichthys osculus ssp.) occur in the area, and some endemic snail species have recently been discovered in the area as well. Of these species, the Amargosa vole is both State- and Federally-listed as endangered, and the Cottonball Marsh pupfish is listed by the State as threatened. Other species may well qualify for listing in the future, when more is known about them.

Because these species are totally dependent on surfacing groundwater, the Department is concerned about any effects the waste repository may have on groundwater flows and groundwater supplies. The SCP indicates that the groundwater that supplies the springs and streams in California originates from recharge areas in Nevada. These groundwaters flow underground, past the Yucca Mountain disposal site, and then to California in a slow, complicated underground path that the SCP indicates is not well understood. If the construction or operation of the waste repository interrupts or depletes these groundwater flows, water supplies for the many fish and wildlife species listed above, and other plant and animal species as well, could be reduced or cut off. Because some of these species occur nowhere else on earth, this could cause the extinction of several fish and wildlife species.

The Department believes that the U.S. Department of Energy should perform the necessary studies to determine if the project will reduce or cut off groundwater flows to California. The Department notes that the SCP describes several planned studies that relate to groundwater. However, the SCP does not include a study element specifically aimed at addressing potential project effects on fish and wildlife populations dependent on groundwater supplies. The Department recommends that such a study element be added to the SCP as a separate and significant part of the overall study plan. Furthermore, the Department recommends that if this study determines that impacts on California's fish and wildlife populations could occur, the U.S. Department of Energy should implement alternative project features or modifications, or develop adequate mitigation measures, so that these impacts do not occur.

Response
Nitrophila mohavensis is listed in the description of sensitive species at Ash Meadows (Section 3.1.5.1.3 of the EIS). As stated in Section 4.1.3.3, DOE does not anticipate that groundwater withdrawals would affect the regional groundwater system to an extent that could affect downgradient groundwater use or users.

8.11.4 (6294)
Comment - EIS001727 / 0009
There's a failure to adequately assess impacts beyond radiation impacts in Nevada, and I don't have time to tell you about the potential impacts of building a rail spur to Yucca Mountain on big horn sheep migration routes, but it's important to remember we have a sensitive and fragile desert ecology, and radiation is not the only issue with this facility.

Response
The EIS (Sections 4.1.4, 5.9, 6.1.2.4, 6.3.1.2, 6.3.2, and 6.3.3) provide analyses of both the radiological and nonradiological impacts on the biological resources. Regarding impacts on bighorn sheep, EIS Sections 3.2.2.1.4 and 3.2.2.2.4 highlight the sheep populations most likely to be affected. The *Environmental Baseline File for Biological Resources* (DIRS 104593-CRWMS M&O 1999), which is referenced in the EIS, further describes and maps bighorn sheep populations and migration corridors near candidate rail corridors that were considered. It is acknowledged in Section 9.3.4.2 that construction of some transportation routes could disrupt movements of game animals. Section 9.3.4.2 states that DOE would mitigate to reduce habitat fragmentation and barriers to animal movements in the design and construction of branch rail lines, routes, and fencing after seeking advice from wildlife agencies and organizations. As stated in Chapter 6 and elsewhere, DOE would conduct more detailed field surveys,

government consultation, analyses, and appropriate National Environmental Policy Act reviews if a proposal was made to select a specific rail alignment within a corridor or a specific location of an intermodal transfer station or the need to upgrade the associated heavy-haul truck routes. These would include consultations with State wildlife management agencies, the Bureau of Land Management, the Army Corps of Engineers, and other applicable government agencies. They also would include field surveys (as applicable) and more detailed assessments and analyses of wetlands and other waters; floodplains; sensitive species; effects of habitat fragmentation, interruption of movements, mortality, and harassment on wildlife, horses, and burrows; loss of hunter-generated revenue, spread of noxious weeds, and soils.

8.11.4 (7223)
Comment - EIS001337 / 0097
Page 3-129 2nd paragraph. The Caliente intermodal site is the location of the City of Caliente's wastewater treatment facility. Lands on the site are irrigated with effluent. The site is fully developed. Moist areas are likely the result of irrigation and are not springs or wetlands. This site has been previously cleared through NEPA [National Environmental Policy Act] for construction of wastewater treatment facilities using federal funding.

Response
Sections 3.2.2.2.1 and 6.3.3.2.1 of the EIS state that there is a wastewater treatment facility near the site of a candidate intermodal transfer station at Caliente. DOE has changed the text of Section 3.2.2.2.4 to clarify that moist areas within the site might be wetlands or other waters of the United States resulting from adjacent springs or they might be caused by irrigation from the treatment facility.

8.11.4 (7441)
Comment - EIS001969 / 0003
Transportation of high level radioactive waste to Yucca Mountain by truck or rail from nuclear facilities nationwide also has the potential to impact wildlife resources should a breach in containment occur. There is an inherent risk associated with transportation of any hazardous material. Although DOE has conducted detailed analysis of worst case scenarios, even the best waste management strategies cannot predict every possibility. We understand that the radioactive waste would be transported in a virtually leak-proof stainless steel cask in the form of dry pellets which would make release of any waste material extremely remote. Nevertheless, there remains a potential environmental risk, albeit minuscule, at any given point along the proposed rail or highway transportation corridor.

Response
DOE agrees that a release of hazardous materials during accidents involving spent nuclear fuel or high-level radioactive waste would be very unlikely. With regard to the potential impacts to wildlife resources, a transportation accident could result in the dispersal or death of individual members of a species within a localized area but would be unlikely to have long-term detrimental effects upon a population as a whole.

8.11.4 (10189)
Comment - EIS001888 / 0560
[Clark County summary of comments it has received from the public.]

The EIS should evaluate the impacts to game habitat and protect species from potential transportation accidents.

Response
Sections 6.3.2 and 6.3.3 of the EIS assess the impacts of transportation activities on game habitat and protected species, including the extent of habitat disturbances and the possibility that trucks or trains could accidentally kill animals. DOE did not evaluate impacts from potential transportation accidents directly because their estimated rates (see Section J.1.4.2.3.2) would be so low (3.21×10^{-7} accidents per truck-kilometer; 5.39×10^{-8} per railcar-kilometer) that losses of habitats or individuals would be unlikely to have detectable impacts on the regional populations of any species. In addition, impacts would be small in comparison to losses due to other traffic on the highways or rail lines.

8.11.4 (11311)
Comment - EIS001814 / 0040
DEIS Page 6-10
Loss of habitat from construction of a branch rail line would be the greatest potential impact to biological resources, potentially affecting the desert tortoise, a threatened species.

DEIS Page 6-46
Game and Game Habitat. Each candidate rail corridor would cross or be near [within 5 kilometers (3 miles)] several areas the Bureau of Land Management and the Nevada Division of Wildlife have designated as game habitat. Construction activities in these areas would result in a loss of some habitat. Each rail corridor has the potential to disrupt movement patterns of game animals. The design of fences, if built, along the rail corridor, would accommodate the movement of these animals. Large animals including game species (elk, bighorn sheep, mule deer, etc), wild horses, and burros probably would avoid contact with humans at construction locations and would temporarily move to other areas during construction. Numerous special status species occur along each of the branch rail lines. Construction of a branch rail line could lead to habitat loss and fragmentation for the special status species, as well as to mortality of individuals.

DOE has significantly understated the impact to biological resources. Loss of habitat would not be limited only to the physical loss of habitat due to the construction of the rail line. The operation of the rail line would reduce the value of habitat crossed or near to the line, resulting in significantly greater loss in habitat than just the area physically within the rail line right-of-way.

All of the rail corridors except the Valley Modified cross and are near to critical habitat for many species of wildlife. Critical habitat is absolutely necessary for wildlife. Human activity, such as the operation of a rail line, in or even near critical habitat can seriously degrade the value of that habitat for wildlife. This is especially true of linear facilities, such as a rail line, that pass through habitat areas. Without undisturbed access to critical habitat, the wildlife using that habitat may abandon large areas of year-round habitat. Critical habitat crossed by or near to rail corridors includes bighorn sheep crucial winter range, mule deer crucial winter range, pronghorn winter range, sage grouse strutting areas, sage grouse nesting areas, chukar crucial habitat and quail crucial habitat.

The Carlin and Jean corridors also cross migration corridors for big game. Linear facilities such as rail lines can significantly impact the movement of big game. This is particularly true in areas where steep cuts or fills are required. The Jean corridor also crosses a potential migration corridor for bighorn sheep from winter range in the Devils Hole Hills to historic but currently unoccupied habitat at the northwest end of the Spring Mountains. Although currently not used, the disruption of this migration corridor would be a significant impact. Bighorn sheep are particularly susceptible to disease. An unoccupied habitat area represents the potential to establish another herd unit that could provide greater protection for the continued recovery of the bighorn sheep.

The Environmental Baseline File for Biological Resources (TRW 1999k) lists the following crucial habitats within each of the 400 meter wide rail corridors:

Caliente: Bighorn Sheep Crucial Winter Habitat (Cedar Range), Mule Deer Crucial Winter Range (Cedar Range), Quail Crucial Habitat in Meadow Valley

Carlin: 3 Sage Grouse Strutting Areas (Grass Valley, Rye Patch Canyon, and Monitor Valley), Sage Grouse Nesting Area (Monitor Valley), Pronghorn Winter Range, Ungulate Migration Corridor between Simpson and Toquima Ranges, Bates Mountain Antelope Release Area, Simpson Park Habitat Management Area

Caliente Chalk Mountain: Bighorn Sheep Crucial Winter Habitat (Cedar Range), Mule Deer Crucial Winter Range (Cedar Range), Crucial Areas for Quail (Meadow Valley)

Jean: Crucial Bighorn Sheep Winter Habitat (Wilson Pass) and Winter Habitat (west of Wilson Pass), Bighorn Sheep Migration Corridor and Potential Migration Corridor, Crucial Chukar Habitat (Goodsprings), Crucial Areas for Quail (Goodsprings, Pahrump, Johnnie), and Mule Deer Winter Habitat

Although the Valley Modified corridor does not contain crucial habitat, it does cross the Desert National Wildlife Refuge (DNWR) in several places, including the Corn Creek Springs area. The DNWR was set aside primarily for desert bighorn sheep. It also provides habitat for mule deer, other desert mammals, and migratory birds. The Corn Creek area contains an environment filled with trees, pasture and spring-fed ponds which attract a large number of migrating birds not common to the desert environment. The ponds are home to the endangered Pahrump poolfish.

Each of the corridors contain many additional biological resources within the corridor or within 5 kilometers of the corridor. Although these resources are identified in the Environmental Baseline File, the DOE makes no attempt to quantify the impacts of the rail line on most of these resources.

The EIS does not contain an assessment of the impact of fencing on wildlife. This is inexcusable, since the impact of fencing was identified by the Bureau of Land Management as a major issue (TRW 1999k, p 5-1).

Response
DOE has added lists of the threatened and endangered species, sensitive species, game habitat, springs, and riparian areas that are known to occur within 5 kilometers (3 miles) of rail corridors and described those resources more fully in Section 3.2.2.1.4 of the EIS. Sections 6.3.2.1 and 6.3.2.2 have been modified to describe the impacts on game animals. This information describes the impacts to biological resources from the construction of a branch rail line in a corridor. It is, therefore, sufficient for making decisions on the basic approaches for transportation and the choice among transportation corridors. As suggested in the Foreword to the EIS, Chapter 6, and elsewhere, DOE would conduct detailed field surveys, analyses, consultations with the Bureau of Land Management and Nevada Division of Wildlife, and appropriate National Environmental Policy Act reviews if there was a proposal to select a specific rail alignment in a corridor.

All candidate rail corridors but the Valley Modified would cross several areas the Bureau of Land Management and Nevada Division of Wildlife have designated as game habitat (see Section 3.2.2.1.4 of the EIS). In addition, the candidate rail corridors are within 5 kilometers (3 miles) of other game habitat and some cross areas identified as migration routes. An approximately 60-meter (200-foot)-wide section of game habitat would be cleared of vegetation or otherwise disturbed during construction, and other game habitat would be lost in borrow areas, access roads, and other disturbances required to construct a branch rail line. Some of this land would be reclaimed after construction, but the value of that land to game and other wildlife would be diminished for many years. The value of habitat adjacent to a branch rail line would be diminished if game animals avoided those areas due to noise or presence of humans. Construction of a branch rail line could disrupt movements between those habitats and along migration routes, especially if DOE had to fence the rail line. Fence design would accommodate the movements of game animals to the extent possible. The construction of a branch rail line could decrease hunting opportunities in and adjacent to habitat along a corridor.

8.11.4 (11749)
Comment - EIS002299 / 0007
California's State Park System contains 265 park units encompassing 1.4 million acres within which the State is responsible for preserving representative samples of the State's extraordinary biological resources and diversity. Nearly half of these park units, including State Parks, State Historic Parks, State Beaches and State Recreational Areas, are located along potential spent fuel shipment routes in California. In addition, the Death Valley National Park is located adjacent to potential routes in California.

California agencies, as well as the Superintendent of Death Valley National Park, expressed concern about potential transportation impacts in the Death Valley region as well as impacts from these shipments on parks adjacent to shipment corridors. These regions have remote and very limited emergency response capability. In addition, there is concern about the potential impacts on plant and animal populations in the Death Valley region in the event of radionuclide contamination and migration in groundwater, as well as potential adverse impacts on desert bighorn sheep from any roadway or rail construction or improvements.

Response
The calculations in Chapter 5 of the EIS indicate that predicted long-term levels of radionuclide concentration in groundwater and the resulting dose levels at the predicted discharge area in Amargosa Valley, Nevada, would be low. DOE does not expect that the dose rates to plants and animals at that location would cause measurable

detrimental effects in populations of any species because the rates would be less than 100 millirad per day. The International Atomic Energy Agency concluded that chronic dose rates of less than 100 millirad per day are unlikely to cause measurable detrimental effects in populations of even the more radiosensitive species in terrestrial ecosystems (DIRS 103277-IAEA 1992). DOE acknowledged in Section 3.1.4.2.1 of the EIS that a small amount of groundwater might move beyond the primary groundwater discharge point at Alkali Flat (Franklin Lake Playa) to discharge in the Furnace Creek area of Death Valley. However, even if this were to occur, any concentrations in the Furnace Creek area of California would be even less than the concentrations presented in Chapter 5 for the discharge location, because concentrations would decline with distance from the proposed repository.

DOE does not plan to modify highways in California or elsewhere outside Nevada that it would use to transport materials, personnel, or legal-weight truck shipments of spent nuclear fuel to Yucca Mountain. Therefore, these activities would not adversely affect bighorn sheep. Transportation-related habitat fragmentation could occur if highway upgrades were necessary in Nevada for heavy-haul trucks or during construction of a branch rail line. The *Environmental Baseline File for Biological Resources* (DIRS 104593-CRWMS M&O 1999, all) describes bighorn sheep populations and migration corridors near the routes DOE is considering, and Sections 3.2.2.1.4 and 3.2.2.2.4 of the EIS highlight the sheep populations most likely to receive impacts. DOE acknowledges in Section 9.3.4.2 that construction of some transportation routes could disrupt movements of game animals. Section 9.3.4.2 states that DOE would use mitigation measures to reduce habitat fragmentation and barriers to animal movements in the design and construction of branch rail lines, routes, and fencing after seeking advice from wildlife agencies and organizations. As stated in Chapter 6 and elsewhere in the EIS, DOE would conduct a more detailed assessment of potential impacts on wildlife habitat and movements if it selected a heavy-haul truck or rail route to evaluate and mitigate impacts to bighorn sheep and other resources.

8.11.4.1 Vegetation

8.11.4.1 (5151)
Comment - EIS001444 / 0003
Threatened & Endangered Plants and State Sensitive Plants

State law requires you to survey for cacti along both routes [Caliente and Carlin].

Both routes must be surveyed for T & E and State Sensitive plant species. The following is a list of state sensitive plants which must be surveyed for.

Asclepia eastwoodiana, Eastwood Milkweed - Check all of both the Carlin and Caliente routes north of Stonewall Mountain. The plant usually grows in washes or low hills.

Astragalus funereus, Black Woolypod - Check both routes south of Scotty's Junction into the Test Site. It generally grows on hillsides.

Cymopterus ripleyi var saniculoides, Sanicle Biscuitroot - Check the Carlin route through Smoky Valley to Tonopah. The plant usually grows in sandy soils.
Penstemon arenarius, Nevada Dune Beard-tongue - Check all of both the Caliente route. The plant usually grows in sandy soils.

Sclerocactus nyensis - Check both routes from Tonopah south into the Test Site. It grows on soils derived from volcanic ash.

The Carlin route through Smoky Valley appears to go by or through Cresent Dunes T.4 N., R.41 E., plate 6. This area has recreation value along with a number of State Sensitive species. The train should be run through the far western edge of the corridor to avoid Crescent Dunes if this route is chosen. If any of the above plants are found, mitigating measures need to be implemented at that time.

Response
The *Environmental Baseline File for Biological Resources* (DIRS 104593-CRWMS M&O 1999) contains detailed maps of the known locations of sensitive plant and animal species (including Bureau of Land Management-sensitive

species) within 5 kilometers (3 miles) of rail corridors. DOE obtained this information in part from meetings held with Bureau biologists in Battle Mountain (January 27, 1997) and Tonopah (February 14, 1997) and from Resource Management Plans. The Draft EIS included lists of those species. This information will allow DOE to determine if there would be any significant impacts to biological resources from upgrades of a highway to support heavy-haul vehicles or construction of a branch rail line with in any of the rail corridors. It is, therefore, sufficient for making decisions regarding the basic approaches for transportation, as well as the choice among alternative transportation corridors. As indicated in Chapter 6 and elsewhere in the EIS, if the site was approved DOE would conduct more detailed field surveys, analyses, consultations with the Bureau, and appropriate National Environmental Policy Act reviews to evaluate further the impacts associated with a specific rail corridors or heavy-haul truck route. These would include consultations with State wildlife management agencies, the Bureau of Land Management, the Army Corps of Engineers, and other applicable government agencies. They also would include field surveys (as applicable) and more detailed assessments and analyses of wetlands and other waters; floodplains; sensitive species; effects of habitat fragmentation, interruption of movements, mortality, and harassment on wildlife, horses, and burrows; loss of hunter-generated revenue, spread of noxious weeds, and soils.

8.11.4.2 Wildlife

8.11.4.2 (43)
Comment - 3 comments summarized
The EIS should evaluate the impacts that fencing of a rail line could have on the habitat and movement of wildlife.

Response
Section 3.2.2.1.4 of the EIS lists the big game habitat that is crossed by the candidate rail corridors. These habitats and other biological resources near the corridors are further described and mapped in the *Environmental Baseline File for Biological Resources* (DIRS 104593-CRWMS M&O 1999). It is acknowledged in Section 6.3.2.1 that construction of a branch rail line could disrupt movements of game animals and that fencing would be designed to accommodate movements of wildlife. Section 9.3.4.2 lists modification of branch rail lines, routes, and fencing as a mitigation measure to minimize impacts of rail line construction on animal movements. DOE agrees with the comments that additional, site-specific information on fencing would be necessary prior to construction of a branch rail line. However, DOE believes that the EIS provides sufficient information on impacts to biological resources to make informed decisions regarding the basic approaches (for example, mostly rail or mostly truck shipments), as well as the choice among alternative transportation corridors. If the site was approved, DOE anticipates that the project plan and design would continue to evolve, creating additional opportunities for mitigation and potentially eliminating the need for some mitigation measures currently under consideration. Chapter 9 of the EIS, which provides DOE's initial list of commitments available at this time, identifies DOE-determined impact reduction features, procedures and safeguards; and mitigation measures under consideration for inclusion in the project plan and design. Chapter 9 also identifies ongoing studies that could eventually influence mitigation measures related to the project plan and design.

As noted in Chapter 6 and elsewhere in the EIS, if a repository was to be constructed at Yucca Mountain, a more detailed assessment of the potential impacts on wildlife habitat and wildlife movements would be prepared for a specific rail alignment.

8.11.4.2 (392)
Comment - EIS000039 / 0002
The Virgin River may be the home of certain endangered species of fish, other wildlife and fauna.

Response
On December 17, 1998, DOE requested a species list from the U.S. Fish and Wildlife Service and began a formal consultation to evaluate if the Proposed Action could affect endangered and threatened species, including those in the Virgin and Muddy rivers. DOE submitted its Biological Assessment of possible effects to the U.S. Fish and Wildlife Service on April 24, 2000. DOE and the U.S. Fish and Wildlife Service have completed consultation on the potential effects of repository construction, operation, and closure on threatened and endangered species. In its Biological Opinion, the Fish and Wildlife Service concluded that these actions would not jeopardize the continued existence of the Mojave population of the desert tortoise (see Appendix O of the EIS for the Final Opinion). Species in and near the Virgin River would not be affected.

8.11.4.2 (2211)
Comment - EIS000621 / 0001
My family and I own the Crescent Valley Mineral Hot Springs Trailer Park and Farms which is located one and-a-half miles from the proposed rail line outside of Crescent Valley at Hot Springs Point.

The rail line crosses between our place and town. We have a lot of concerns about the impact on our area there because it's a major riparian area and a wildlife area.

Response
DOE is aware of these springs (see DIRS 104593-CRWMS M&O 1999). The corridor is more than 2 kilometers (1.2 miles) from the springs and, therefore, should not affect the riparian areas or wildlife using them. As suggested in Chapter 6 of the EIS, if DOE chose the Carlin Corridor, it would conduct additional detailed field surveys, analyses, and appropriate National Environmental Policy Act reviews to further evaluate impacts to these springs. As stated in Section 9.3.4.2, DOE is committed to minimizing and mitigating impacts of construction and operation of a transportation route on springs and other riparian areas.

8.11.4.2 (2719)
Comment - EIS000637 / 0002
We own a hot springs, pool and house, one-half mile from the proposed rail line and a trailer one and-a-half miles on the other side. At our hot springs, there [are] a lot of different kind of birds that come there. We have a wetlands, and there's been about 50 different species of birds that land there and rest up before they go on to other places, and we have a lot of animals there, and if they build a railroad, all that noise is going to scare them away, and plus the train will scare them away when it comes through here.

Response
DOE is aware of these springs (see DIRS 104593-CRWMS M&O 1999). The corridor is more than 2 kilometers (1.2 miles) from the springs and, therefore, should not affect the riparian areas or wildlife using them. As indicated in Chapter 6 of the EIS, if DOE chose the Carlin Corridor, it would conduct additional detailed field surveys, analyses, and appropriate National Environmental Policy Act reviews to further evaluate impacts to these springs. As stated in Section 9.3.4.2, DOE is committed to minimizing and mitigating impacts of construction and operation of a transportation route on springs and other riparian areas.

8.11.4.2 (4147)
Comment - EIS001206 / 0002
The discussion of Environmental Impacts of Transportation to Biological Resources and Soils (Section 6.1.2.4) relating to the construction of a branch rail line is inadequate because it fails to properly consider and address the regional and rangewide implications of the loss of unique desert tortoise (Gopherus agassizii) populations and the genetic potential of these populations at northern extremes of this species range. It is inadequate because it fails to properly consider and address the regional and rangewide implications of increases in traffic on unique desert tortoise (Gopherus agassizii) populations at the northern extremes of this species range due to this activity. It is inadequate because it fails to properly consider and address the regional and rangewide implications of increases in raven populations and their increased levels of predation on unique desert tortoise (Gopherus agassizii) populations at the northern extremes of this species range due to this activity.

The discussion of impacts of construction of a branch rail line is inadequate because it fails to properly consider and address the regional and rangewide implications of loss of individuals and the loss of impacts on unique desert tortoise (Gopherus agassizii) populations at the northern extremes of this species range due to this activity.

The discussion of the Jean rail corridor is inadequate because it fails to consider that this corridor would pass through or near the Clark County Desert Tortoise Large-Scale Translocation Study Site (LSTS) west of Jean. Clark County has invested significant resources in establishing this site and funding studies to investigate the efficacy of translocating displaced desert tortoises. Currently more than 2,000 displaced desert tortoises have been successfully translocated to this site and many more will be translocated over the coming several years. This site is crucial to desert tortoise conservation and management in Clark County. The people of Clark County have overwhelmingly supported desert tortoise conservation actions because, in part, displaced tortoises have been humanely provided a

wild home at the LSTS. Threats to the integrity of the LSTS would jeopardize public support for tortoise conservation efforts.

The discussion of impacts of construction of a branch rail line in the Valley Modified corridor is inadequate because it fails to properly consider and address the regional and rangewide implications of loss of individuals and that loss of impacts on unique desert tortoise (Gopherus agassizii) population at the northern extremes of this species range due to this activity.

Response
DOE did consider the regional and rangewide implications of the Proposed Action, the loss of genetic potential, and impacts of transportation options on desert tortoises and concluded that the Proposed Action could affect a few individual tortoises, but would not negatively affect the genetic potential or the long-term survival of regional populations of desert tortoises or jeopardize the continued existence of the species. The abundance of desert tortoises within most of the candidate rail corridors is low. In addition, DOE would implement all terms and conditions of the incidental take authorization included in the U.S. Fish and Wildlife Service's Biological Opinion, including those for minimizing impacts from ravens. Section 6.1.2.4 of the EIS has been modified to better clarify this conclusion.

DOE believes that the EIS provides the information necessary to make decisions regarding the basic approaches (for example, mostly rail or mostly truck shipments), as well as the choice among alternative transportation corridors. As stated in the Chapter 6, more detailed field surveys, analyses, and appropriate National Environmental Policy Act reviews would be conducted if a specific branch rail line alignment was chosen. If necessary, this would include more detailed analyses of the impacts on desert tortoises, including the potential effects on translocation studies being conducted near Jean.

8.11.4.2 (4148)
Comment - EIS001206 / 0003
The discussion of Impacts of Nevada Mostly Legal-Weight Truck Transportation Scenario (Section 6.3.1.1) is inadequate because it fails to properly consider and address the regional and rangewide implications of the loss of unique desert tortoise (Gopherus agassizii) populations and the genetic potential of these populations at the northern extremes of this species range in the vicinity of the Repository and throughout Southern Nevada adjacent to I-15 and U.S. 95. It is inadequate because it fails to properly consider and address the regional and rangewide implications of increases in traffic on unique desert tortoise (Gopherus agassizii) populations at the northern extremes of this species range in the vicinity of the Repository and throughout Southern Nevada adjacent to I-15 and U.S. 95 due to this activity. It is inadequate because it fails to properly consider and address the regional and rangewide implications of increases in raven populations and their increased levels of predation on unique desert tortoise (Gopherus agassizii) populations at the northern extremes of this species range in the vicinity of the Repository and throughout Southern Nevada adjacent to I-15 and U.S. 95 due to this activity. The discussion of the contribution of truck traffic related to this activity and its impact on desert tortoise populations is lacking a consideration of noise and low frequency vibrations. This issue is of concern to Clark County because it is engaged in supporting significant conservation actions in areas adjacent to and in the regional vicinity of the Repository that may be indirectly impacted.

The discussion of the impacts of the Caliente-Las Vegas heavy-haul truck route (Section 6.3.3.1) is inadequate because it fails to properly consider and address the local, regional, and rangewide implications of the loss of unique desert tortoise (Gopherus agassizzi) populations and the genetic potential of these populations at the northern extremes of this species range in the vicinity U.S. 93 in Coyote Springs Valley due to construction activities in upgrading the roads. It is inadequate because it fails to properly consider and address the local, regional and rangewide implications of increases in raven populations and their increased levels of predation on unique desert tortoise (Gopherus agassizii) populations at the northern extremes of this species range in the vicinity of U.S. 93 in Coyote Springs Valley due to construction activities and increased traffic during operation. The discussion of the contribution of truck traffic related to this activity and its impact on desert tortoise populations is lacking a consideration of noise and low frequency vibrations and their impacts on desert tortoises. This issue is of concern to Clark County because it is engaged in supporting significant conservation actions in areas adjacent to and in the regional vicinity of the Repository and along the Caliente-Las Vegas heavy-haul truck route and in the regional vicinity of the route that may be indirectly impacted.

The discussion of the impacts of the Sloan/Jean heavy-haul truck route (Section 6.3.3.2.1) is inadequate because it fails to properly consider and address the local, regional, and rangewide implications of the loss of unique desert tortoise (Gopherus agassizii) populations and the genetic potential of these populations at the northern extremes of this species range in the vicinity I-15 in upper Ivanpah Valley due to construction activities in upgrading the roads and construction of the intermodal transfer station. It is inadequate because it fails to properly consider and address the local, regional, and rangewide implications of increases in raven populations and their increased levels of predation on unique desert tortoise (Gopherus agassizii) populations at the northern extremes of this species range in the vicinity of I-15 due to construction activities and increased traffic during operation. The discussion of the contribution of truck traffic related to this activity an its impact on desert tortoise populations is lacking a consideration of noise and low frequency vibrations and their impacts on desert tortoises. The discussion of the Sloan/Jean heavy-haul truck route is inadequate because it fails to consider that this route would pass through or near the Clark County Desert Tortoise Large-Scale Translocation Study Site (LSTS) west of Jean and west of I-15. Clark County has invested significant resources in establishing this site and funding studies to investigate the efficacy of translocating displaced desert tortoises. Currently more than 2,000 displaced desert tortoises have been successfully translocated to this site and many more will be translocated over the coming several years. This site is crucial to desert tortoise conservation and management in Clark County. The people of Clark County have overwhelmingly supported desert tortoise conservation actions because, in part, displaced tortoises have been humanely provided a wild home at the LSTS, Threats to the integrity of the LSTS would jeopardize public support for tortoise conservation's efforts. This issue is of concern to Clark County because it is engaged in supporting significant conservation actions in areas adjacent to and in the regional vicinity of the Repository and along the Caliente-Las Vegas heavy-haul truck route and in the regional vicinity of the route that may be indirectly impacted.

This discussion of the impacts of the Apex/Dry Lake heavy-haul truck route (Section 6.3.3.1) is inadequate because it fails to properly consider and address the local, regional, and rangewide implications of the loss of unique desert tortoise (Gopherus agassizii) populations and the genetic potential of these populations at the northern extremes of this species range in the vicinity I-15 and U.S. 95 due to construction activities and increased traffic during operation. The discussion of the contribution of truck traffic related to this activity and its impact on desert tortoise populations is lacking a consideration of noise and low frequency vibrations and their impacts on desert tortoises. This issue is of concern to Clark County because it is engaged in supporting significant conservation actions in areas adjacent to and in the regional vicinity of the Repository and along the Caliente-Las Vegas heavy-haul truck route and in the regional vicinity of the route that may be indirectly impacted.

Response
As stated in Section 6.3.1.2 of the EIS, legal-weight truck shipments would have little or no additional effect on desert tortoises or the abundance of ravens because they would increase truck traffic on Nevada highways by less than 0.15 percent. Upgrading of highways to support heavy-haul trucks would have minimal impact on desert tortoises because associated land disturbances would occur adjacent to those highways, where tortoises are rare or absent. Section 6.1.2.4 has been modified to clarify this conclusion. DOE is unaware of any scientific information about adverse effects of noise or low-frequency vibrations on tortoises.

DOE believes that the EIS provides the information necessary to make decisions regarding the basic approaches (for example, mostly rail or mostly truck shipments) as well as the choice among alternative transportation corridors. As indicated in Chapter 6 of the EIS, more detailed field surveys, analyses, and appropriate National Environmental Policy Act reviews would be prepared if a specific heavy-haul route was chosen. If necessary, this would include more detailed analyses of the impacts on desert tortoises, including the potential effects on translocation studies being conducted near Jean, Nevada.

8.11.4.2 (5148)
Comment - EIS001444 / 0001
Caliente Route
This route will impact the Reveille, Stone Cabin, Saulsbury, Goldfield, Stonewall, and Bullfrog Wild Horse and Burro Herd Management Areas.

Smoky Valley Route
This route will impact the Dunlap, Goldfield, Stonewall, and Bullfrog Wild Horse and Burro Herd Management Areas.

Monitor Valley Route
This route will impact the Saulsbury, Goldfield, Stonewall, and Bullfrog Wild Horse and Burro Herd Management Areas.

Impacts: The construction of a new haul road or of a rail line will result in several years (2.5 years according to the EIS) worth of disturbance to the Herd Management Areas (HMAs) which these routes will cross. Disturbance will include loss of habitat including forage and water, and may impact foaling areas and traditional winter use areas.

These animals have never seen trains before and the occurrence of such a large, noisy object may cause them to move to different areas to avoid the disturbance. Some of these areas may be outside of their current HMAs. Animals moving outside of their HMAs would have collateral damage on other programs and would likely result in the gathering and removal of these animals.

The loss of habitat is not limited to the direct ground disturbing exercises, but also includes the distance significant noise travels. This noise and activity may cause wild horses and burros to leave the area.

Direct impacts could also include being hit by the train or by the haul trucks. The EIS says "losses would be few and unlikely to affect regional populations of any species." In areas with large numbers of animals this may be true. However, in HMAs with 30 or fewer individuals, the taking of one or two individuals a year may change the entire demographics of a herd. These additional losses coupled with existing losses raises the significance of the cumulative impacts in many areas.

The alternative of using trucks along existing routes will have the least impact on the wild horse and burro resources of this area.

Response
Section 3.2.2.1.4.1 of the EIS lists the wild horse and burro herd management areas mentioned in this comment. Sections 6.3.2.1 and 6.3.2.2 acknowledge the loss of horse and burro habitat and disruption of their movements. DOE modified Section 6.3.2.1 to describe the impacts of construction and operation to wild horses and burros and to include the comment's concern that the potential loss of a few individuals could affect the demographics of small herds. DOE disagrees with the comment that heavy-haul trucks could hit horses and burros; these vehicles would travel at such slow speeds that collisions with horses and burros would be unlikely.

8.11.4.2 (5159)
Comment - EIS001444 / 0012
To make an accurate assessment to impacts to biological resources, a more detailed map will be needed.

The EIS and Appendix J had little information on affected environment and impacted environment to biological resources. A list of BLM [Bureau of Land Management] Sensitive Species that may be affected for the rail routes were not included and [were] referenced only as a number of SSS [state-sensitive species]. What about sensitive/non sensitive bats? These proposed routes will cross foraging habitat areas.

Carlin Rail Corridor
The proposed rail lines will cross through crucial habitat for the Western sage grouse. The routes will most likely have an affect on lekking, nesting, wintering birds, and predation of sage grouse. Studies conducted on the Modoc have shown adverse impacts to sage grouse leks and populations from overhead transmission lines. Sage grouse will be disturbed on leks (in close proximity of rail line), predation and nest loss will likely increase along the rail routes due to associated facilities (i.e. transmission lines that provide predator perches), and habitat fragmentation. Numerous other sensitive species need to be addressed.

Wetland habitats in Oasis Valley near Beatty, are currently being considered for an ACEC nomination under a Land Use Plan Amendment. A conservation agreement and strategy for the Amargosa toad is currently in draft form and will provide for management direction in/near toad habitat.

Has consultation with USFWS begun on desert tortoise?

Caliente Rail Corridor
Where is the location of Railroad Valley springfish on this route? Numerous other sensitive species need to be addressed.

Also issues addressed in the Carlin Route: tortoise, Amargosa-Oasis ACEC, and sage grouse to a lesser extent.

The discussion of special status species (raptors, sage grouse, plants, etc.) is inadequate and almost non-existent.

Response
Detailed maps of sensitive plant and animal species (including Bureau of Land Management sensitive species) within 5 kilometers (3 miles) of rail corridors are contained in the *Environmental Baseline File for Biological Resources* (DIRS 104593-CRWMS M&O 1999). Lists of those biological resources have been added to Section 3.2.2.1.4 of the EIS. This information, including a list of Bureau-sensitive species, was obtained in part from meetings held with Bureau biologists in Battle Mountain (January 27, 1997) and Tonopah (February 14, 1997) and from Bureau Resource Management Plans. The *Environmental Baseline File for Biological Resources* describes locations of sensitive species (including desert tortoise, bats, ferruginous hawk, San Antonio pocket gopher, chuckwalla, and Nevada sanddune beardtongue) and 12 areas of sage grouse habitat within 5 kilometers of the Carlin Corridor. It also describes and maps the Area of Critical Environmental Concern along the Amargosa River, which is more than 3 kilometers (2 miles) from the proposed alignment. Section 6.3.2.2.2 has been modified to better describe possible impacts to sage grouse and other biological resources along the Carlin Corridor. The information on biological resources in the EIS will allow DOE to determine whether there would be any significant impacts to those resources from construction of a branch rail line within any of the rail corridors. It is, therefore, sufficient for making decisions regarding the basic approaches for transportation as well as the choice among alternative transportation corridors. As indicated in Chapter 6 of the EIS, DOE would conduct more detailed field surveys, analyses, consultations with the Bureau, and appropriate National Environmental Policy Act reviews if a decision is made to select a specific rail alignment in a corridor.

DOE and the U.S. Fish and Wildlife Service recently completed consultation (as required by Section 7 of the Endangered Species Act) for construction, operation and monitoring and closure of a repository at Yucca Mountain (see Appendix O of the EIS). If a rail or heavy-haul truck route was selected, DOE would initiate consultation for construction activities.

The only population of the Railroad Valley springfish near a transportation corridor is the introduced population in Warm Springs. This spring is more than 3 kilometers (1.9 miles) north of the Caliente Corridor (see Section 3.2.2.1.4 of the EIS) and adjacent to U.S. 6, which is part of the proposed Caliente heavy-haul truck route (see Section 3.2.2.2.4).

8.11.4.2 (5395)
Comment - EIS001887 / 0103
Page 2-47, Section 2.1.3.3.2 - Nevada Rail Scenario

Crucial habitat for big game is frequently located in or near rugged terrain. This is especially true for crucial winter habitat. Daylight cuts required to traverse rugged terrain also pose a significant threat to big game, which tend to use these areas for movement, especially in times of heavy snow cover. When trapped in a daylight cut, big game cannot escape from an oncoming train, resulting in significant mortality rates for big game in these areas. Thus, the selection criteria that favors more rugged terrain by virtue of avoiding private land ownership greatly increases the potential impact on biological resources.

Response
DOE acknowledges that avoidance of private land in areas with gentle topography might have resulted in some alignments that would require cut slopes that could affect movements of big game. However, as stated in Section 2.3.3.1 of the EIS, "favorable topography (gently sloping, rather than rugged terrain)" was an important factor in the selection of candidate rail routes. Section 6.3.2.1 has been modified to more clearly state that some big game animals could be killed by trains during the operations phase. However, DOE disagrees with the comment that these losses would be significant because the proposed routes go through very few high-elevation mountain passes where snow would accumulate for long periods and because the frequency at which trains would be using a branch rail line

to Yucca Mountain would be low (average of five trains per week). As stated in Section 9.3.4.2, DOE is committed to reducing habitat fragmentation and barriers to animal movements in the design and construction of branch rail lines, routes, and fencing after seeking advice from wildlife agencies and organizations.

8.11.4.2 (5540)
Comment - EIS001660 / 0042
The DEIS fails to adequately address the impacts of the proposed action on wild and free-roaming horses and burros in Mineral County. Many horses and burros inhabit the public and private range lands of the county as well as many rural counties in Nevada. They are protected under the Wild and Free-roaming Horse and Burro Act and are important to the residents of Mineral County and other Nevada counties. The DEIS says (under the land use heading) that the Carlin corridor would cross five management areas (p. 6-60) or six management areas (p. 6-62), and that land would be "converted"; but, the DEIS does not discuss the impacts. The DEIS must analyze how the construction of the proposed Carlin rail corridor (and associated fences and access roads), and related alternative transportation route improvements would affect these horses and burros.

The DEIS stated the "There are no known endangered species on the Yucca Mountain site" (p. 11-15). Then stated that "the desert tortoise in the only threatened species found on the site" 11-15). The DOE maintains it will "fulfill the requirements of the Endangered Species Act, as appropriate, with regard to transportation impacts before making the recommendation determination" (p. 1- 15); yet, it does not identify any endangered species along the transportation routes. The American Buffalo (Bison) which is part of our American heritage inhabit many of the lands not only in the Nevada rural counties, but also in other counties across the country. These majestic animals are an endangered species. Would they be affected and how would they be protected? The DEIS only analyzed endangered species for the YM [Yucca Mountain] site. The DEIS must analyze endangered species along transportation routes, to include related alternative transportation route improvements and the construction of any rail corridors, and address how these animals would be affected.

The DEIS must address direct and indirect impacts on the horses, burros, bison and any endangered species along the transportation routes: (1) their movement and safety; (2) water supplies; (3) forage; and (4) harassment. Would the proposed action cause more damage to the range by restricting the forage for these animals?

Response
The herd management units, threatened and endangered species, and other biological resources most likely to be affected are highlighted in EIS Sections 3.2.2.1.4 and 3.2.2.2.4. As summarized in Chapter 6, the desert tortoise is the only threatened or endangered species that occurs within areas to be disturbed for construction or development of a branch rail line or upgrade of highways for heavy-haul trucks; therefore, DOE has concluded that the desert tortoise is the only such species that would be affected by the Proposed Action. The wood bison, which is found only in Canada, is the only bison classified by the U.S. Fish and Wildlife Service as threatened or endangered. The Proposed Action would have no impact on free-ranging populations of American buffalo.

DOE agrees with the comment that additional, site-specific information would be necessary prior to construction of a branch rail line or road upgrades to support heavy-haul truck shipping. However, DOE believes that the EIS provides sufficient information on impacts to biological resources necessary to make decisions regarding the basic approaches (for example, mostly rail or mostly truck shipments), as well as the choice among alternative transportation corridors. As indicated in Chapter 6 and elsewhere in the EIS, more detailed field surveys, analyses, and appropriate National Environmental Policy Act reviews would be performed and consultations conducted with State wildlife management agencies, the Bureau of Land Management, the Army Corps of Engineers, and other applicable government agencies if a specific branch rail line alignment was chosen. These additional surveys, reviews and consultations would include, as appropriate, more detailed analyses on impacts to endangered species and wild horse herd management units.

8.11.4.2 (5697)
Comment - EIS001887 / 0311
Page 6-10; Section 6.1.2.4 - Biological Resources and Soils

DOE has significantly understated the impact to biological resources. Loss of habitat would not be limited only to the physical loss of habitat due to the construction of the rail line. The operation of the rail line would reduce the

value of habitat crossed or near to the line, resulting in significantly greater loss in habitat than just the area physically within the rail line right-of-way.

All of the rail corridors except the Valley Modified cross and are near to critical habitat for many species of wildlife. Critical habitat is absolutely necessary for wildlife. Human activity, such as the operation of a rail line, in or even near critical habitat, can seriously degrade the value of that habitat for wildlife. This is especially true of linear facilities, such as a rail line, that pass through habitat areas. Without undisturbed access to critical habitat, the wildlife using that habitat may abandon large areas of year round habitat. Critical habitat crossed by or near to rail corridors includes bighorn sheep crucial winter range, mule deer crucial winter range, pronghorn winter range, sage grouse strutting areas, sage grouse nesting areas, chukar crucial habitat, and quail crucial habitat.

The Carlin and Jean corridors also cross migration corridors for big game. Linear facilities such as rail lines can significantly impact the movement of big game. This is particularly true in areas where steep cuts or fills are required. The Jean corridor also crosses a potential migration corridor for bighorn sheep from winter range in the Devil's Hole Hills to historic but currently unoccupied habitat at the northwest end of the Spring Mountains. Although currently not used, the disruption of this migration corridor would be a significant impact. Bighorn sheep are particularly susceptible to disease. An unoccupied habitat area represents the potential to establish another herd unit that could provide greater protection for the continued recovery of the bighorn sheep.

The Environmental Baseline File for Biological Resources (TRW 1999k) lists the following crucial habitats within each of the 400 meter wide rail corridors:

Caliente: Bighorn Sheep Crucial Winter Habitat (Cedar Range), Mule Deer Crucial Winter Range (Cedar Range), Quail Crucial Habitat in Meadow Valley

Carlin: 3 Sage Grouse Strutting Areas (Grass Valley, Rye Patch Canyon, and Monitor Valley), Sage Grouse Nesting Area (Monitor Valley), Pronghorn Winter Range, Ungulate Migration Corridor Between Simpson and Tacoma Ranges, Bates Mountain Antelope Release Area, Simpson Park Habitat Management Area

Caliente B Chalk Mountain: Bighorn Sheep Crucial Winter Habitat (Cedar Range), Mule Deer Crucial Winter Range (Cedar Range), Crucial Areas for Quail (Meadow Valley)

Jean: Crucial Bighorn Sheep Winter Habitat (Wilson Pass) and Winter Habitat (west of Wilson Pass), Bighorn Sheep Migration Corridor and Potential Migration Corridor, Crucial Chukar Habitat (Goodsprings), Crucial Areas for Quail (Goodsprings, Pahrump, Johnnie), and Mule Deer Winter Habitat

Although the Valley Modified corridor does not contain crucial habitat, it does cross the Desert National Wildlife Refuge (DNWR) in several places, including the Corn Creek Springs area. The DNWR was set aside primarily for desert bighorn sheep. It also provides habitat for mule deer, other desert mammals, and migratory birds. The Corn Creek area contains an environment filled with trees, pasture, and spring-fed ponds which attract a large number of migrating birds not common to the desert environment. The ponds are home to the endangered Pahrump poolfish.

Each of the corridors contain many additional biological resources within the corridor or within 5 kilometers of the corridor. Although these resources are identified in the Environmental Baseline File, the DOE makes no attempt to quantify the impacts of the rail line on most of these resources.

The Draft EIS does not contain an assessment of the impact of fencing on wildlife. This is inexcusable, since the impact of fencing was identified by the Bureau of Land Management as a major issue (TRW 1999k, p. 5B1).

Potential transportation impacts to biological resources and soils are only curtly addressed in this section. There is insufficient information and substance for the section to be meaningful.

This section should also include a rigorous analysis of potential impacts from the spread of noxious or invasive plant species as a result of rail spur construction, heavy-haul truck highway improvement, and other activities that facilitate or promote the proliferation of noxious weeds.

Response
Lists of biological resources within and near rail corridors (including those listed by the commenter) have been added to Section 3.2.2.1.4 of the EIS. Sections 6.3.2.1 and 6.3.2.2 have been modified to address the commenter's concerns and more clearly describe impacts of branch rail line construction and fencing on biological resources. This information on known locations of sensitive species, game habitat, springs, riparian areas, and other biological resources within and near the rail corridors will allow DOE to determine if there would be any significant impacts to biological resources from construction of a branch rail line within any of the corridors. It is therefore sufficient for making decisions regarding the basic approaches for transportation, as well as the choice among alternative transportation corridors. As indicated in Chapter 6 of the EIS, more detailed field surveys, government consultation, analyses, and appropriate National Environmental Policy Act reviews would be conducted if a decision was made to select a specific rail alignment within a corridor or a specific location of an intermodal transfer station or the need to upgrade the associated heavy-haul truck routes. These would include consultations with State wildlife management agencies, the Bureau of Land Management, the Army Corps of Engineers, and other applicable government agencies. They also would include field surveys (as applicable) and more detailed assessments and analyses of the effects of habitat fragmentation, interruption of movements, mortality, and harassment on wildlife, horses, and burros; impacts of fencing, and spread of noxious weeds.

The Valley Modified Corridor is more than 4 kilometers (2.5 miles) from the Corn Creek Springs (see Section 3.2.2.1.4 of the EIS) and would not affect species there.

8.11.4.2 (6572)
Comment - EIS001632 / 0058
Page 6-38, Section 6.3.1.1: DOE recognizes that desert tortoises will be killed as a result of transportation operations. The Department reaches the conclusion that "any desert tortoises killed by trucks transporting spent nuclear fuel or high-level radioactive waste probably would be only a small fraction of all desert tortoises killed on highways." This may be true, but what is the anticipated impact of this operation relative to the desert tortoise population on the Nevada Test Site (NTS)? The higher concentration of shipments on the NTS could result in a proportionately higher impact than in the general environment. However, it may be possible that the impact on the tortoise population might be less than in the general environment since the NTS has a protection program in place.

Response
DOE and the U.S. Fish and Wildlife Service (see Appendix O of the EIS) have concluded that the loss of a small number of tortoises along roads and at the repository site would not affect the long-term survival of the local or regional population of desert tortoises. Tortoises are widespread throughout the region and large tracts of undisturbed tortoise habitat surround Yucca Mountain. Research at Yucca Mountain during site characterization confirms that activities similar to those proposed would have little effect on adjacent populations. The rate of tortoise mortality would remain comparable to that observed during site characterization because the amount of traffic would be similar. Under the legal-weight truck scenario, the repository would receive about 40 shipments a day of supplies, materials, and equipment (Section J.3.6.1 of the EIS), and six shipments of spent nuclear fuel or high-level radioactive waste (Section J.1.2.1). During site characterization, the daily average number of vehicles passing traffic counters in 1993 and 1994 was between 40 and 55 (DIRS 104294-CRWMS M&O 1999). The U.S. Fish and Wildlife Service has authorized an unlimited take of tortoises along roads at Yucca Mountain during repository construction and monitoring and closure in part because deaths due to vehicles are anticipated to be very infrequent (see Appendix O). Section 4.1 has been modified to better explain the conclusion that the Proposed Action would not affect the tortoise population.

8.11.4.2 (6717)
Comment - EIS001878 / 0075
The DEIS fails to adequately address the impacts of the proposed action on wild and free-roaming horses and burros. Many horses and burros inhabit the public and private range lands of Eureka County and neighboring counties. They are protected under the federal Wild and Free-roaming Horse and Burro Act and are of concern to the residents of Eureka County. The DEIS says (under the land use heading) that the corridor would cross five management areas (p. 6-60) or six management areas (p. 6-62), and that land would be "converted." But the DEIS does not discuss the impacts.

The DEIS must disclose the impacts upon Eureka County's wild horses and burros of: (1) conversion of range land to other uses, (2) fragmentation of herd management areas, (3) loss of forage from land disturbance, introduction of weeds, increased wildfire, or other factors, (4) restrictions on wild horse movement, (5) loss of water supplies, or restricted access to water supplies, (6) loss of horses hit by trains or other motor vehicles, and the associated public safety implications, (7) changes in the cost of wild horse management, , and (8) increases in harassment of horses. The impact analysis must address both construction and operation of fences, water wells, the railroad bed and tracks, and access roads along and perpendicular to the tracks.

The DEIS does not adequately address the impacts of the proposed action on wildlife. (pp. 6-10, -11, -37, -47, -60) Deer, antelope, sage grouse and other game and nongame species of wildlife inhabit the rangelands and uplands of Eureka County. The DEIS says that construction of the rail corridor would result in loss and fragmentation of habitat, disrupt wildlife, and kill individual animals (p. 6-47) but provides no specific information. The DEIS says under the land use heading that the corridor would cross the Bates Mountain antelope release area, three designated riparian habitats, and the Simpson Park habitat management area (p. 6-60) but does not discuss impacts on these areas. (According to the FEIS, Proposed Fallon Range Training Complex Requirements, Naval Air Station Fallon, NV [Department of the Navy and Bureau of Land Management, January 2000], the Simpson Park range is also the site of a wilderness study area. The DEIS does not disclose this fact, or discuss any impacts upon the study area.) Finally, the DEIS says on page 6-62 that the corridor would cross seven areas designated as game habitat, but does not discuss impacts on them either.

The DEIS must disclose the impacts upon Eureka County's wildlife of: (1) conversion of wildlife habitat to other uses, (2) fragmentation of habitat, (3) damage to forage from land disturbance, introduction of weeds, increased wildfire, or other factors, (4) restrictions on wildlife movement and migration, (5) loss of water supplies, or restricted access to water supplies, (6) loss of wildlife hit by trains or other motor vehicles, and the associated public safety implications, (7) changes in value of wildlife areas for hunting and fishing, (8) changes in the costs of wildlife management, and (9) increases in harassment of wildlife. The impact analysis must address both construction and operation of fences, water wells, the railroad bed and tracks, and access roads along and perpendicular to the tracks, and it must be species-specific.

The DEIS must specifically disclose the impacts of the proposed action on winter deer range in the vicinity of Beowawe, including the Horseshoe Ranch, and the impacts on deer migration between winter range in the Dry Hills northeast of Hot Springs Point and summer range to the north. Nevada's Division of Wildlife, the BLM [Bureau of Land Management], and others have spent large amounts of money restoring the winter range in this area, and the proposed action may negate those expenditures.

Response

Detailed maps of game habitat within 5 kilometers (3 miles) of rail corridors are contained in the *Environmental Baseline File for Biological Resources* (DIRS 104593-CRWMS M&O 1999). Lists of those biological resources have been added to Section 3.2.2.1.4 of the EIS. Sections 6.3.2.1 and 6.3.2.2 have been modified to address the commenter's concerns and more clearly describe impacts of branch rail line construction on biological resources, including impacts to horses, burros, and game animals and the likelihood and effects of the spread of weeds.

The information on biological resources in the EIS will allow DOE to determine if there would be any significant impacts to those resources from construction of a branch rail line within any of the rail corridors. It is therefore sufficient for making decisions regarding the basic approaches for transportation as well as the choice among alternative transportation corridors. As indicated in Chapter 6 of the EIS, more detailed field surveys, government consultation, analyses, and appropriate National Environmental Policy Act reviews would be conducted if a decision was made to select a specific rail alignment within a corridor or a specific location of an intermodal transfer station or the need to upgrade the associated heavy-haul truck routes. These would include consultations with State wildlife management agencies, the Bureau of Land Management, the Army Corps of Engineers, and other applicable government agencies. They also would include field surveys (as applicable) and more detailed assessments and analyses of the effects of habitat fragmentation, interruption of movements, mortality, and harassment on wildlife, horses, and burrows; loss of hunter-generated revenue; and spread of noxious weeds.

The text in Section 6.3.2.2.2 of the EIS was corrected to state that the route passes through six wild horse and burro management areas.

Land-use impacts of the rail corridors and alternatives were analyzed in the EIS. The primary alternative for the Carlin Corridor does not pass through the Simpson Park Wilderness Study Area. However, the Steiner Creek variation of the Carlin Corridor does pass near or within the edge of that wilderness study area east of Grass Valley Ranch. The Bureau of Land Management has recommended that this area is not suitable for wilderness designation (DIRS 103366-BLM 1984). The EIS has been modified to include information on the corridor variations and a discussion of this wilderness study area, therefore, has been added.

The rail corridor is south of mule deer winter habitat in the vicinity of Beowawe and west of habitat in the Dry Hills and therefore would not affect deer in those areas.

8.11.4.2 (7213)
Comment - EIS001337 / 0093
Page 3-107 Section 3.2.1.4. [and Page 3-127 Section 3.2.2.4] This section should include reference to the Southwest Willow Flycatcher (Empidonax trallii extimus) which was listed by the U.S. Fish and Wildlife Service as endangered in February 1995. Habitat for this species may be found proximate to the Caliente, Caliente Chalk Mountain, Carlin, Jean and Valley Modified rail routes.

Response
DOE modified Sections 3.2.2.1.4 and 6.3.2.2.1 of the EIS to state that southwestern willow flycatchers have been observed in dense stands of riparian vegetation in Lincoln County; however, there is no suitable habitat for this species in the Caliente or Caliente-Chalk Mountain Corridor. DOE also modified Sections 3.2.2.2.4 and 6.3.3.2.1 to state that this species has been detected in Meadow Valley Wash, but there is no suitable habitat at the potential site of a Caliente intermodal transfer station. Finally, DOE modified Sections 3.2.2.2.4 and 6.3.3.2.3 to state that southwestern willow flycatchers occur in dense riparian vegetation in Pahranagat Valley, and that improvements of U.S. 93 along the candidate Caliente/Las Vegas heavy-haul truck route would not affect that habitat. These conclusions are based on the Biological Assessment of potential impacts of the Proposed Action on threatened and endangered species (DIRS 152511-Brocoum 2000).

8.11.4.2 (7231)
Comment - EIS001337 / 0121
Page 9-19 Section 9.3.4.1. The 3rd and 4th bulleted actions are inconsistent with the recently adopted Clark County multispecies habitat conservation plan. Clearance surveys have come to be of marginal value since the disposition of collected tortoises is often euthanasia.

Response
The Proposed Action would be consistent with Section 7 of the Endangered Species Act, which covers Federal actions, not Section 10, which covers private actions and requires a plan such as the Clark County Multiple Species Habitat Conservation Plan. The two actions referred to in the comment are terms and conditions required by the U.S. Fish and Wildlife service to mitigate the take of tortoises during repository construction and operation (see Appendix O of the EIS), and probably would be required for transportation-related construction. Clearance surveys are an effective method for protecting desert tortoises from linear (for example, a branch rail line) or relatively small disturbances in areas where tortoises are abundant. Moving tortoises or their eggs that are found to be in harm's way into suitable habitat adjacent to the proposed project area is an effective mitigation measure compared with placing them in captivity or killing them as is done in the Clark County Multiple Species Habitat Conservation Plan.

8.11.4.2 (7532)
Comment - EIS001912 / 0056
Pg. 3-107 Biological Resources-it appears from the description that the Nevada Division of Wildlife nor the U.S.F.W.S were consulted. Big Game habitats and other important habitats within the corridor need to be described and identified in relationship to proposed corridors.

Response
DOE compiled the description of biological resources in Sections 3.2.2.1.4 and 3.2.2.2.4 of the EIS from the best available information, including data from the Nevada Division of Wildlife, Nevada Natural Heritage Program, Bureau of Land Management, U.S. Fish and Wildlife Service, Forest Service, and National Park Service. Sections 3.2.2.1.4 and 3.2.2.2.4 summarize big game habitats and other important habitats for each transportation corridor.

The *Environmental Baseline File for Biological Resources* (DIRS 104593-CRWMS M&O 1999) describes these resources in detail.

8.11.4.2 (9478)
Comment - EIS001888 / 0221
[Summary of comments noted by Clark County Nuclear Waste Division staff at various citizens' meetings.]

Indicated that if a spill went into the Virgin River it could impact the "endangered" fish in the river.

Response
For a truck accident involving spent nuclear fuel or high-level radioactive waste to have an impact on threatened and endangered species, the accident would have to involve forces greater than those for which the casks were designed. Legal-weight trucks carrying spent nuclear fuel and high-level radioactive waste would travel at speeds well within predicted cask survivability requirements. Because of the high level of performance required by regulations, it is estimated that 99.99 percent of all accidents during the transport of spent nuclear fuel and high-level radioactive waste would result in no radiological releases (Section J.1.4.2.1 of the EIS). Severe accidents that could cause extensive damage to a shipping cask have been estimated to occur less than one time in 10 million truck accidents. Given the extremely small proportion of traffic carrying spent nuclear fuel and high-level radioactive waste and the normal low rate of accident occurrence, the likelihood of one of these vehicles being involved in an accident is extremely low. The additional likelihood that an accident would result in a damaged shipping cask and the release of radioactive materials is even lower. In addition, the likelihood that such an accident would occur in one of the few areas along routes where threatened or endangered species occur is very low. Based on this information, DOE has concluded in a Biological Assessment of the effects of the Proposed Action on threatened and endangered species (DIRS 152511-Brocoum 2000) that the probability of a transportation accident involving a legal-weight truck negatively affecting listed species in the Virgin River and elsewhere along existing highways is discountable.

8.11.4.3 Soils

8.11.4.3 (5528)
Comment - EIS001660 / 0038
The DEIS fails to adequately address the impacts of the proposed actions on soils in Mineral County other affected counties (pp. 6-11, -37, -47). Given Nevada's arid climate, the desert soils are fragile and easily disturbed, and may not recover on their own. Compaction of access roads would increase, not decrease, erosion (p. 6-47). Nevada's mines are subject to some of the most stringent reclamation requirements in the country. Reclamation is technically and financially demanding, careful planning, contouring, planting, maintenance; and, in many cases, irrigation during establishment of vegetation. The DEIS must analyze the impacts on soils from constructing a raised railroad bed and access roads, including extensive cut and fill operations, to constructing additional heavy-haul roads.
Response
None of the activities proposed would occur in Mineral County. Descriptions of the potential impacts of the construction of a branch rail line or heavy-haul truck route on soils in other counties are included in Sections 6.3.2.1 and 6.3.3.1 of the EIS. DOE recognizes that soils in arid climates are often easily disturbed and slow to recover and has developed successful methods for reclaiming disturbed sites at Yucca Mountain (see Section 4.1.4.4). DOE agrees with the commenter that additional, site-specific information on soils would be necessary prior to construction of a branch rail line or road upgrades to support heavy-haul truck shipping. As indicated in Chapter 6 of the EIS, more detailed field surveys, government consultation, analyses, and appropriate National Environmental Policy Act reviews would be conducted if a decision was made to select a specific rail alignment within a corridor or a specific location of an intermodal transfer station or the need to upgrade the associated heavy-haul truck routes. These would include field surveys (as applicable) and more detailed assessments and analyses of soils and reclamation methods.

The sentence in Section 6.3.2.1 of the EIS has been modified to clarify that roads would be compacted, covered with gravel, or otherwise treated to reduce erosion and maintain their stability.

8.11.4.3 (6706)
Comment - EIS001878 / 0070
The DEIS fails to adequately address the impacts of the proposed action on soils in Eureka County and other counties. (pp. 6-11, -37, -47) Given Nevada's arid climate, the desert soils are fragile and easily disturbed, and may not recover on their own. Compaction of access roads would increase, not decrease, erosion. (p. 6-47) Nevada's mines are subject to some of the most stringent reclamation requirements in the country. Reclamation is technically and financially demanding, requiring careful planning, contouring, planting, maintenance, and--in many cases--irrigation during establishment of vegetation.

The DEIS must analyze the impacts on soils from constructing a raised railroad bed and access roads, including extensive cut and fill operations.

Response
DOE recognizes that soils in arid climates are often easily disturbed and slow to recover (see Section 4.1.4.4 of the EIS). Section 9.3.4.2 describes the mitigation measures that are being considered to minimize erosion and aid recovery of soils.

DOE agrees with the commenter that additional, site-specific information on soils would be necessary prior to construction of a branch rail line or road upgrades to support heavy-haul truck shipping. However, DOE believes that the EIS provides sufficient information on impacts to soils necessary to make decisions regarding the basic approaches (for example, mostly rail or mostly truck shipments), as well as the choice among alternative transportation corridors. As indicated in Chapter 6 of the EIS, more detailed field surveys, government consultation, analyses, and appropriate National Environmental Policy Act reviews would be conducted if a proposal was made to select a specific rail alignment within a corridor or a specific location of an intermodal transfer station or the need to upgrade the associated heavy-haul truck routes. These would include consultations with State wildlife management agencies, the Bureau of Land Management, the Army Corps of Engineers, and other applicable government agencies. They also would include field surveys (as applicable) and more detailed assessments and analyses of soils and biological resources.

DOE believes that compacting disturbances such as access roads (Section 6.3.2.1 of the EIS) would decrease erosion in comparison with uncompacted disturbed soils, but not in comparison with undisturbed soils that are probably in equilibrium with regard to wind and water erosion.

8.11.4.3 (7089)
Comment - EIS001337 / 0033
In scoping comments to the EIS, Lincoln County and the City of Caliente noted that baseline geology and soil conditions could impact upon construction and operation of repository system components, including transportation infrastructure. The County and City noted for example that fault and soil features might impair facility integrity and alteration of area soils might induce or exacerbate flooding, water quality, and air quality impacts. The County and City observed that construction of a rail spur through Lincoln County would require extensive quantities of ballast and other roadbed materials. The County and City recommended that the DEIS ,include an inventory of potentially suitable sites to borrow materials within Lincoln County and the DEIS include geologic and soils mapping for all candidate sites and corridors potentially hosting repository system components, including transportation, within Lincoln County. It was noted in the County and City scoping comments that such inventory of soils should be completed to also facilitate preparation of plans for revegetating areas disturbed by construction activities. To facilitate DOE consideration of soil conditions, the County offered to provide DOE county-wide digital soils map coverage at 1:100,000 scale, which had been developed by the County. The Affected Environment section of the DEIS provides no information on specific soil conditions within Lincoln County. This is despite analyses contained within Section 6 of the DEIS which attempt to describe impacts of transportation activities on soils.

Response
In response to this comment, DOE examined information from the Natural Resource Conservation Service to determine if any of the candidate rail corridors would cross prime farmlands and to identify serious engineering constraints that soil conditions could cause. The results of that analysis have been added to Sections 6.3.2.1 and 6.3.3.1 of the EIS to describe potential impacts of the construction of a branch rail line or heavy-haul truck route on soils. The Department agrees with this comment that more site-specific information on soils would be necessary

before the construction of a branch rail line or road upgrades to support heavy-haul trucks. As indicated in Chapter 6 of the EIS, DOE would conduct more detailed field surveys, government consultation, analyses, and appropriate National Environmental Policy Act reviews if there was a decision to select a specific rail alignment in a corridor, or a specific location of an intermodal transfer station and the need to upgrade the associated heavy-haul truck routes. These would include more detailed analyses of soils and reclamation methods.

8.11.5 CULTURAL RESOURCES

8.11.5 (5499)
Comment - EIS001660 / 0026
The DEIS fails to analyze impacts of the proposed action on archeological and ethnographic resources in Nevada and Mineral County (pp. 6-11,-37,-47). Although the DEIS says that "Table 3-36 lists the cultural resource information currently available in each corridor", it lists only the number of recorded sites, of which there are approximately 110. Rather than saying that impacts could occur during construction and not during operations (p. 6-40, 48), the DEIS must specifically disclose anticipated impacts upon archeological and ethnographic resources in Nevada and Mineral County. The analysis must consider the impacts of improved access to archeological and ethnographic sites. Additional surveys and studies are needed to identify impacts (p. 6-11) and must be completed prior to a decision on a transportation mode, route, or corridor.

Response
DOE is adopting a phased approach to the identification, evaluation, and assessment of impacts to cultural resources, including archaeological, historic, and Native American, for Nevada transportation. Under this approach, existing data sets are examined for relevant information on the known occurrence of cultural resource properties in the candidate corridors for the EIS. Once DOE identified the preferred mode of transportation and routing, it would complete specific cultural resource and ethnographic field studies for the preferred route(s).

In this context, DOE reevaluated the adequacy of the existing baseline cultural resource data in the Draft EIS. To strengthen the analysis for Nevada transportation, this Final EIS incorporates data from the evaluation of additional sources in the cultural resource site files and literature.

8.11.5 (5572)
Comment - EIS001887 / 0198
Page 3-112; Section 3.2.2.1.5 - Cultural Resources

Although archaeological inventories and testing have occurred at Yucca Mountain itself as part of site characterization activities, historic property surveys meeting the Secretary of Interior's Standards have not been conducted for the railroad corridors. As the Draft EIS acknowledges, ethnographic studies for these corridors are lacking and must be conducted to identify sites to which a tribe might attach religious or cultural significance. Were any of the rail routes used historically as transportation routes? Direct impacts would occur as a result of the construction of lines, but the Draft EIS fails to note that historic or cultural landscapes might also be impacted as a result of this construction. Again, DOE needs to consult with the State Historic Preservation Office (SHPO) regarding the definition of this Area of Potential Effect (APE).

Additionally, the Programmatic Agreement (DOE 1988b, all), referenced in this section, regards site characterization activities solely and should not be used for the entire project. The programmatic agreement states that:

Whereas, development of the repository and other facilities specified in the NWPA are not within the scope of this Programmatic Agreement, but will be dealt with through additional consultation with the Advisory Council on Historic Preservation (Council) per the Council's regulations "Protection of Historic Properties" (36 CFR Part 800 as revised on September 2, 1986) (Appendix 1);

Amendments to the National Historic Preservation Act and subsequently to 36 CFR Part 800 necessitate a new agreement that includes Native Americans as signatories where the APE (as identified within the transportation systems) crosses the Moapa Indian Reservation and Las Vegas Paiute Indian Reservation. As per the new

regulations, the SHPO is identified as a consulting party and should be involved in negotiations for a new programmatic agreement.

This section on cultural resources for the rail corridors provides insufficient data to determine location and numbers of historic properties. DOE needs to consult with SHPO to identify consulting parties and define an APE. DOE needs to prepare a new programmatic agreement that details how it will identify, evaluate, and treat historic properties and how the consultation process shall occur.

Response
The existing Programmatic Agreement between DOE and Advisory Council on Historic Preservation covers cultural resource requirements for site characterization activities at Yucca Mountain. DOE recognizes that construction of the repository and a Nevada transportation corridor or route would require a new and updated Programmatic Agreement. In coordination with the Advisory Council, the Nevada State Historic Preservation Office, involved Native American tribes and organizations, and other interested parties, DOE would complete a Programmatic Agreement, following the recently amended 36 CFR Part 800, Section 106, guidelines.

Known cultural resource data presented in the Draft EIS for the candidate rail corridors were collected during a site file search for previous fieldwork and recording of archaeological and historic sites within the designated region of influence. In addition, DOE reevaluated available information on archaeological, historic, and Native American cultural resources. These reevaluations are included in the analyses of candidate rail corridors, routes for heavy-haul trucks, and sites for intermodal transfer stations presented in Chapter 6 of the EIS. The information used in the analysis is sufficient to allow DOE to assess the potential for impacts to cultural resources along each of the candidate rail corridors, routes for use by heavy-haul trucks, and sites for construction of an intermodal transfer station.

DOE recognizes that project area-specific cultural resource surveys have not been conducted for the proposed transportation implementing alternatives and related project areas. Completion of archaeological surveys for all areas subject to ground-disturbing activities during transportation-related construction would be completed prior to initiation of any ground-disturbing actions.

Federal regulations provide for phased identification and evaluation of cultural resources in projects where alternatives under construction consist of corridors or large land areas (36 CFR 800.4). Due to the overall length of the proposed rail and heavy-haul truck implementing alternatives considered in the EIS, it is not practical nor cost-effective to conduct extensive field surveys prior to selection of the mode of transportation and corridor or route. Prior to initiation of the cultural resource surveys, identification of the corridor centerline and right-of-way boundaries would be required. Moreover, until selection of the final route is completed, related engineering studies to identify potential access needs and material sites cannot be completed. If and when these decisions have been finalized, cultural resource surveys would be completed in compliance with the requirements of applicable sections of the National Historic Preservation Act and 36 CFR Part 800.

8.11.5 (7216)
Comment - EIS001337 / 0094
Page 3-113 Table 3-36. This table is misleading in that it only reflects the number of sites identified to date and does not make clear that not 100 percent of each corridor has been surveyed. The table should be revised to reflect the percent of each route surveyed to date.

Response
The second and third paragraphs of Section 3.2.2.1.5 of the EIS, which reference the table, discuss the archaeological site file search results and the approximate percentage of each corridor. The incorporation of these data in the table itself would be redundant.

8.11.5 (9665)
Comment - EIS002074 / 0009
It appears that in looking at some of these sites, and, again, finding in my previous suggestion or finding here on the systematic ethnographic studies, that it appears that only a desktop review has been conducted of the corridors with respect to cultural resources. We were talking in here and just trying to imagine that if this project had to conduct

mechanical or geological studies or maybe even a site characterization study without doing any in-field analysis -- so we believe that it's been a bit shortsighted in that respect. And that, again, reinforces the need for those further kinds of studies. Also, with that when and if site selection is decided and transportation corridors are decided, that it's believed that there should be one monitor out there for any kind of activity going on.

Secondly, there should be preliminary cultural assessments being conducted leading to those systematic interviews that were recommended previously.

Response
DOE collected the cultural resource data presented in the EIS for the candidate rail corridors during a site file search for previous fieldwork and recording of archaeological and historic sites in the region of influence. In addition, in response to public comments, DOE reevaluated available information on archaeological, historic, and Native American cultural resources. The analyses of candidate rail corridors, routes for heavy-haul trucks, and sites for intermodal transfer stations include these reevaluations. The information used in the analyses is sufficient to enable DOE to assess the potential for impacts to cultural resources for each rail corridor, route for use by heavy-haul trucks, and site for construction of an intermodal transfer station.

DOE acknowledges that there have been no project area-specific cultural resource surveys for the proposed transportation corridors, routes, intermodal transfer station sites, and related project areas. The Department would complete archaeological surveys for all areas subject to ground-disturbing activities during transportation-related construction before such activities started. Federal regulations provide for phased identification and evaluation of cultural resources in projects in which alternatives under consideration consist of corridors or large land areas (36 CFR 800.4). Due to the overall length of the proposed rail and heavy-haul truck scenarios considered in the EIS, extensive field surveys prior to selection of the final mode of transportation and route would be impractical. Before the cultural resource surveys, DOE would identify the corridor centerline and right-of-way boundaries. Moreover, until selection of the final route was complete, the Department would be unable to complete related engineering studies to identify potential access needs and material sites. After these activities, DOE would complete cultural resource surveys consistent with the requirements of the National Historic Preservation Act and 36 CFR Part 800.

DOE recognizes that it is common practice to use qualified monitors (cultural resource observers) during construction activities in areas where buried cultural resources might occur. If such places existed along a selected corridor or route or at an intermodal transfer station site, DOE would use qualified monitors to ensure there was no inadvertent disturbance or destruction of cultural resources.

8.11.5.1 Archaeological and Historic Resources

8.11.5.1 (254)
Comment - 3 comments summarized
Commenters noted that the Draft EIS did not identify any direct or indirect impacts to historic sites due to the operations of heavy-haul trucks along any of the heavy-haul truck routes. Specifically, the commenters expressed disagreement because older historic buildings in Goldfield, Nevada, are within 10 feet of the highway. Commenters indicated that there is no room available to widen the highway through Goldfield and that it would be necessary to build a roadway around the business section of the town to address this impact.

Response
In response to these comments, DOE examined available literature on potential impacts from heavy-haul trucks on historic buildings. Based on current analyses, DOE believes that ground-level vibration would be well below that which could adversely affect such structures. Section 6.3 of the EIS now includes the results of this evaluation. DOE recognizes that if it selected a heavy-haul truck route that passed through a historic downtown district, such as that in the Town of Goldfield, additional evaluation of this situation could be necessary, including evaluation of the historic structures themselves. In addition, DOE continues to consider the use of bypass routes as an option.

8.11.5.1 (4294)
Comment - EIS001160 / 0103
Page 6-11, Section 6.1.2.5: The archeological impacts on the five rail corridors are essentially unassessed and unquantified. There is no information provided that would allow assessments to be made of the option to avoid

outstanding significant sites rather than to damage, destroy or treat through data recovery. Sites should be characterized by type and the constraints provided for avoidance rather than damage or data recovery by rail construction.

Response
DOE cannot completely delineate identification and assessment of the number of significant cultural resource properties, potential impacts, and mitigation options until it could complete field inventories for the selected corridor. At this time, however, DOE can make high-level comparisons on the relative "richness" of a corridor from a cultural resources standpoint based on existing information and the potential for cultural resources to occur due to knowledge about a corridor's characteristics, proximity to known sites, and an area's relationship to known historic events. If the site was recommended and approved, the Department would conduct additional field studies after selecting a preferred transportation corridor, which would occur only after the President and Congress, if necessary, agreed with any possible forthcoming recommendation that Yucca Mountain would be suitable for a repository. Therefore, it is impossible to incorporate such data in the EIS. However, DOE would complete all required cultural resource studies before making a decision on a specific alignment within a corridor.

8.11.5.1 (5152)
Comment - EIS001444 / 0004
Cultural Heritage Impacts

Section 3.2.2.1.5 Page 1-112, Paragraph 2
The state repository for cultural files for Lander and Eureka Counties is the Nevada State Museum in Carson City; the Harry Reid Center does not have the records for these counties. Any overview for projects in Lander or Eureka Counties that fails to check the Nevada State Museum records is inadequate. In addition, since the majority of the land that will be impacted by the transportation alternatives is managed by the Bureau of Land Management, records in the various BLM field offices should have also been checked.

1. Map submitted with EIS is too generalized. It doesn't provide enough geographic information. Proposed routes could impact any number of valleys and mountain ranges. Without specific geographic references it is difficult to determine the impacts.

2. While the plan generally describes proposed actions that will impact areas outside the Yucca Mountain Repository, the effected environment section of the EIS fails to discuss the resources and the potential impacts to resources outside area of Yucca Mountain. The "potential rail corridors" (Carlin and Caliente) and the "variations of potential rail corridors" go through some of the most culturally significant areas within the Tonopah Resource Area. Big Smokey, Monitor, Reveille, Hot Creek, and Oasis Valleys, all contain high concentrations of prehistoric sites. Additionally many of those sites and geographic locations are likely to be identified as TCP's [Traditional Cultural Properties]. South Stone Cabin and Ralston Valleys contain numerous historic sites related to WWII. Many of the known sites located in previously mentioned locations do meet the criteria for significance as defined in the National Historic Preservation Act.

Response
DOE reviewed archaeological site file records at the Nevada State Museum in Carson City to acquire information on known sites along corridors in Lander and Eureka Counties. DOE has revised Section 3.2.2.1.5 of the EIS to include this information. DOE has incorporated information from additional site file searches in the EIS, including relevant Bureau of Land Management District and Resource Area office records, and literature reviews for the areas that the candidate transportation corridors cross to support the comparative analysis of cultural resource issues between corridor alternatives.

8.11.5.1 (5168)
Comment - EIS001910 / 0007
The potential adverse impacts regarding transportation include cultural integrity, health, and economic considerations. The existing transportation routes and construction of new rail and highway infrastructure could destroy significant cultural sites. Even though mention is made that preconstruction surveys may occur, modification or relocation of these routes would not necessarily happen based on the Department's assessment of whether rerouting is "reasonable." Tribal importance of cultural integrity becomes secondary to the whims of DOE

archaeologists and anthropologists. It is an important point that the archaeologists and anthropologists conducting the studies and surveys are non-Indian and, it is our understanding, not from the Yucca Mountain region.

Response
It is premature to address detailed analyses of cultural resources along a candidate transportation route in Nevada, since a decision to select a route has not been made. If the Yucca Mountain site was found suitable for a nuclear waste repository, DOE would select a rail corridor for constructing and operating a branch rail line or select a location for an intermodal transfer station and an associated route for use by heavy-haul trucks. DOE then would conduct additional National Environmental Policy Act analyses that could be required to evaluate, avoid, or mitigate potential impacts of a specific rail alignment or specific location of an intermodal transfer station. Any new construction of transportation infrastructure in Nevada would include specific cultural resource surveys and Native American interactions.

For the EIS, DOE obtained cultural resource studies from the Desert Research Institute, which has principal offices in Las Vegas and Reno, Nevada. The research professionals involved at the Institute have direct experience in southern Nevada and Yucca Mountain area anthropology and archaeology. In addition, local Western Shoshone, Southern Paiute, and Owens Valley tribal representatives have worked closely with DOE cultural scientists for resource protection since the late 1980s.

8.11.5.1 (5576)
Comment - EIS001887 / 0203
Page 3-133; Section 3.2.2.2.5 - Cultural Resources

The State Historic Preservation Office [SHPO] comments on highway corridors and intermodal transfer stations are the same for rail corridors. Insufficient data is presented to determine the location and number of historic properties. DOE needs to consult with SHPO to identify consulting parties and define an APE [Area of Potential Effect]. DOE needs to prepare a new programmatic agreement that details how it will identify, evaluate, and treat historic properties and how the consultation process shall occur. In addition, the State requests responses to the following questions:

1. Has consultation with Native Americans proceeded regarding the highway systems and intermodal transfer stations?

2. Has DOE examined whether the use of highways has the potential to affect historic properties?

Response
DOE has begun preliminary interactions with the State Historic Preservation Office, the Advisory Council on Historic Preservation, and Native American tribes and organizations to complete a Programmatic Agreement covering repository construction and related activities.

DOE examined available literature on potential impacts from heavy-haul trucks on historic buildings. Based on current analyses, DOE believes that ground-level vibration would be less than levels that could adversely affect historic structures.

8.11.5.1 (5698)
Comment - EIS001887 / 0313
Page 6-11; Section 6.1.2.5 - Cultural Resources

Historic properties should be identified before effects are determined.

Response
In response to public comments, DOE reevaluated available information on archaeological, historic, and Native American cultural resources. The analyses of candidate rail corridors, routes for heavy-haul trucks, and sites for intermodal transfer stations in Chapter 6 of the EIS include these reevaluations. The information used in the analyses is sufficient to enable DOE to assess the potential for impacts to cultural resources for each rail corridor, route for use by heavy-haul trucks, and site for construction of an intermodal transfer station.

Following requirements and guidelines outlined in relevant historic preservation laws and regulations, DOE would identify and evaluate all historic properties along a selected transportation route before starting ground-disturbing activities. The Department would assess potential impacts to important properties and develop appropriate options for mitigation.

8.11.5.1 (6671)
Comment - EIS001878 / 0053
The DEIS fails to analyze impacts of the proposed action on archeological and ethnographic resources in Nevada and Eureka County. (pp. 6-11, -37, -47) Although the DEIS says that "Table 3-36 lists the cultural resource information currently available in each corridor," it lists only the number of recorded sites, of which there are approximately 110. The DEIS says that additional information is available for the Carlin corridor (p. 3-113), but does not say what it includes. Furthermore, the DEIS does not specify whether Table 3-36 applies to the candidate rail corridors, the variation of the potential corridor, or both. (See Figure 6-12, p. 6-59.)

Rather than saying that impacts could occur during construction but not during operations, (p. 6-48, -40) the DEIS must specifically disclose anticipated impacts upon archeological and ethnographic resources in the Carlin corridor and Eureka County. The analysis must consider the impacts of improved access to archeological and ethnographic sites. The additional surveys and studies needed to identify impacts (p. 6-11) must be completed prior to a decision on a transportation mode, route, or corridor.

Response
DOE is adopting a phased approach to the identification, evaluation, and assessment of impacts to cultural resources, including archaeological, historic, and Native American, for Nevada transportation. Under this approach, existing data sets were examined for relevant information on the known occurrence of cultural resource properties in the candidate corridors for the EIS. If DOE identified its preferred mode of transportation and routing, it would complete specific cultural resource and ethnographic field studies for the preferred route(s).

In this context, DOE reevaluated the adequacy of the existing baseline cultural resource data for the EIS. To strengthen the analysis for Nevada transportation, this Final EIS incorporates data from the evaluation of additional sources in the cultural resource site files and literature.

8.11.5.1 (7142)
Comment - EIS001337 / 0039
Lincoln County and the City of Caliente recommended that the repository EIS include field surveys of alternative rail corridors, material sites, and other areas where construction may occur to determine the location and significance of any archeological resources. The DEIS does not identify potential borrow pits and therefore has not included an assessment of the archaeologic resources at such sites. Such an omission makes the document less useful as a decision-support tool, particularly in choosing among transportation corridor alternatives.

Lincoln County and the City of Caliente recommended that the DEIS include an inventory of important historic resources within Lincoln County along transportation corridors and in the vicinity of construction material sites. The DEIS does not identify potential construction material or man Camp sites and therefor no inventory of historic resources in the vicinity of such areas is included within the DEIS. The absence of this information makes the document less useful as a tool for discriminating among alternative transportation corridors.

Response
In response to public comments, DOE reevaluated available information on archaeological, historic, and Native American cultural resources in the Final EIS. The information used in the analyses is sufficient to enable DOE to assess the potential for impacts to cultural resources for each rail corridor, route for use by heavy-haul trucks, and site for construction of an intermodal transfer station.

DOE acknowledges that there have been no project area-specific cultural resource surveys for the candidate transportation corridors, routes, intermodal transfer station sites, and related project areas. The Department would complete archaeological surveys for all areas subject to ground-disturbing activities during transportation-related construction before such activities started. Federal regulations provide for phased identification and evaluation of cultural resources for projects in which alternatives under consideration consist of corridors or large land areas

(36 CFR 800.4). Due to the overall length of the rail and heavy-haul truck scenarios considered in the EIS, extensive field surveys prior to selection of the final mode of transportation and route would be impractical. Before the cultural resource surveys, DOE would identify the corridor centerline and right-of-way boundaries. Moreover, until selection of the final route was complete, the Department would be unable to complete related engineering studies to identify potential access needs and material sites. After these activities, DOE would complete cultural resource surveys in accordance with the requirements of the National Historic Preservation Act and 36 CFR Part 800.

8.11.5.1 (7214)
Comment - EIS001337 / 0099
Page 3-133 Section 3.2.2.2.5. The fourth line of the 2nd paragraph of this section should reflect that archaeological sites are "at or near" sites. The Caliente site has been developed as the City of Caliente's wastewater treatment facility. The site has been wholly disturbed. The significance of cultural resources as an issue at this site needs to be reconsidered within the DEIS.

Response
DOE has revised Section 3.2.2.2.5 of the EIS to include the disturbance of the area that includes the two candidate intermodal transfer station sites at Caliente due to the City's wastewater treatment plant. Section 3.2.2.1 discusses the land disturbance in more detail. DOE believes that it has dealt with the significance of the cultural resources in this area in an appropriate manner.

8.11.5.1 (8360)
Comment - EIS001873 / 0044
P. 3-133. The rock art site is fairly close to the Caliente intermodal site.

Response
If the Caliente intermodal transfer station site was selected for development as part of the Nevada transportation system, additional field studies would be completed to identify all cultural resource properties that are situated within or adjacent to the station site. Further, the potential for direct or indirect impacts would be evaluated, and mitigation strategies would be developed, as necessary.

The archaeological site file search conducted for the Draft EIS identified this site as being close to the alternative intermodal transfer station site.

8.11.5.2 NATIVE AMERICAN INTERESTS

8.11.5.2 (5153)
Comment - EIS001444 / 0006
The Native American Consultation section of the EIS fails to address the possible concerns of the various tribes and groups in regard to the proposed transportation routes. It is probable that they will have a large number of concerns, since the proposed actions will pass through culturally important areas that not only contain a large number of conventionally recognizable sites, but also less obvious, yet traditionally important, trails, geographic locations, plants, animals, and minerals.

Response
Section 4.4 of DOE's reference document *American Indian Perspectives on the Yucca Mountain Site Characterization Project and the Repository Environmental Impact Statement* (DIRS 102043-AIWS 1998) offers Native American views on transportation issues. This report correctly notes that DOE has not completed ethnographic studies involving Native American peoples along the candidate rail corridors.

In accordance with its Indian Tribal Government Policy, DOE, through the Native American Interaction Program, is committed to involving tribes and organizations in future studies to identify, evaluate, and protect cultural resources important to Native Americans that could occur along the route selected in the final analysis for Nevada transportation.

The Final EIS transportation analysis incorporates additional information on Native American issues for lands that the transportation corridors cross. This information is available in the general literature, and environmental reviews for adjacent projects – for example, Nellis Air Force Base, Nevada Test Site, and the recent DOE evaluation of Native American issues along proposed highway routes for the intermodal transportation of low-level radioactive waste to the Nevada Test Site. Many of the routes evaluated for the low-level waste transportation routing correspond to the repository heavy-haul truck scenarios.

8.11.5.2 (8379)
Comment - EIS001873 / 0064
P. 6-48. Under Cultural Resources the necessary systematic studies of Native American sites and resources should be included in the EIS.

Response
The comment refers to impact analyses associated with transportation corridors. DOE cannot delineate the identification and assessment of the number of Native American sites, potential impacts, and mitigation options until it has completed field inventories of a specific corridor, once it was selected. The Department would conduct the required field studies after selecting a preferred transportation corridor, which would occur only after the President and Congress agreed with any possible forthcoming recommendation that Yucca Mountain would be suitable for a repository. Therefore, it is impossible to incorporate such data in the EIS. However, DOE would conduct all required cultural resource studies and Native American interactions before initiating any corridor construction activities.

8.11.5.2 (9650)
Comment - EIS002074 / 0006
On the transportation portion is that the transportation model only considered portions within -- we have conflicting views -- of either a quarter or a half mile of the proposed transportation corridors. And, as we know, that because there's been the lack of systematic ethnographic studies in those areas, that there potentially may be other cultural considerations that should be given because of potential traditional cultural properties or other cultural resources sites that would be by areas or fall within those corridors.

Response
The region of influence for the archaeological site file search for the rail corridors includes a 0.25-mile (400-meter)-wide zone.

DOE is aware of the current lack of detailed site-specific cultural resource investigations along many of the candidate transportation corridors. If a selection was made regarding mode and routing of a corridor, intensive cultural resource and ethnographic studies would be conducted to identify and evaluate all cultural resources sites that could be affected by construction and operation of the corridor.

8.11.5.2 (9747)
Comment - EIS001888 / 0331
[Clark County summary of comments it has received from the public.]

Commenters requested that the EIS evaluate cultural resources nearby Yucca Mountain and along proposed regional rail/heavy haul corridors (Carlin and Jean routes, in Lincoln and Esmeralda counties, historic Palisade- Eureka route) given the proposal to construct and operate the repository system. More specifically, commenters indicated that the EIS should consider historical and prehistoric sites, paleontologic resources, and Native American land claims and religious freedom issues. Analyses must also be based on Class III field surveys, as well as other forms of research.

Response
In response to public comments, DOE reevaluated available information on archaeological, historic, and Native American cultural resources. The analyses of candidate rail corridors, routes for heavy-haul trucks, and sites for intermodal transfer stations in Chapter 6 of the EIS include these reevaluations. The information used in the analyses is sufficient to enable DOE to assess the potential for impacts to cultural resources for each rail corridor, route for use by heavy-haul trucks, and site for construction of an intermodal transfer station.

As stated in the sections of Chapter 6 of the EIS that address potential cultural resource impacts, DOE agrees that additional analyses of archaeological, historic, and Native American cultural resources along a selected transportation corridor or route for heavy-haul trucks and the selected site of an intermodal transfer station would be necessary. DOE disagrees, however, that Class III (intensive) field surveys of each candidate rail corridor, highway route for heavy-haul trucks, and site for an intermodal transfer station would be necessary to provide information to support possible transportation route decisions in Nevada. Such decisions would be to select a particular rail corridor for construction of a branch rail line or a particular route for use by heavy-haul trucks and a particular site for construction of an intermodal transfer station. However, once a decision was made on the transportation mode and route in Nevada, DOE would complete Class III field surveys before starting ground-disturbing activities.

8.11.5.2 (9748)
Comment - EIS001888 / 0332
[Clark County summary of comments it has received from the public.]

Commenters, representing Native Americans, requested more formal involvement in the overall NEPA [National Environmental Policy Act] process to ensure that tribal rights and concerns are considered prior to decision-making or Departmental action. Many commenters cited: (1) the DOE's Indian policy regarding government-to-government relations, (2) tribal sovereign rights to regulate tribal lands and resources, and (3) cultural resource laws (National Historic Preservation Act, Native American Graves Protection and Repatriation Act, Archaeological Resources and Protection Act) as appropriate justification for greater involvement. Specific involvement issues raised included routing decisions and transportation planning, development of alternatives, impacts to ancestral artifacts, ecosystem impacts, the development of a plan to ensure Native American review of the draft EIS, and financial assistance for consultation purposes.

Response
DOE will interact with the State of Nevada Historic Preservation Office, the Advisory Council on Historic Preservation, and Native American tribes and organizations to complete a Programmatic Agreement covering repository construction and operation and related activities. Interactions are ongoing with the Consolidated Group of Tribes and Organizations through the Yucca Mountain Project Native American Interaction Program. Under this program, DOE has informed tribal representatives of transportation implementing alternatives, including candidate heavy-haul truck highway routes and intermodal transfer station sites (DIRS 102043-AIWS 1998).

8.11.6 SOCIOECONOMICS

8.11.6 (44)
Comment - 3 comments summarized
Several commenters stated that the Draft EIS indicated new jobs will be created in the Caliente/Lincoln County areas as a result of intermodal activities. Commenters said the Final EIS should include an estimate of new residents by age and make a determination of how many school children will be in the school system and how new residents will impact the existing infrastructure.

Response
Section 3.1.7 of the EIS addresses the projected baseline conditions through 2035 for Lincoln County. Sections 6.3.2 and 6.3.3 provide an estimate of the changes in population and other economic measures for each relevant implementing alternative. The transportation analysis in the EIS includes a sensitivity analysis that assigns all potential impacts to Caliente. This analysis conservatively estimates impacts of potential transportation actions on a community level for what could be the most affected community in Nevada.

8.11.6 (740)
Comment - EIS000195 / 0004
The socioeconomic section discussing the impact of heavy haul of the large rail casks totally fails to address the impacts to the quality of life, to the residents of Goldfield and other rural communities resulting from four to five of these large trucks along with the remaining convoy coming through our community every weekday for twenty-four years.

There are residents and businesses within twelve feet of US 95. Also, the trucks will be returning along this route which makes it eight to ten per day. Along these lines, the noise impacts also need to be addressed.

Response
The EIS does assess potential land-use and noise impacts associated with each transportation scenario. Subsequent environmental studies would assess transportation scenarios in more detail to support decisions on preferred transportation alignments and any necessary mitigative actions.

8.11.6 (795)
Comment - EIS000197 / 0002
In the discussion of the socioeconomic impacts associated with construction of the Caliente ... and Carlin ... rail corridors, you identify the annual average number of construction workers to be 500 to 560, and that there would be five construction camps. It would seem that one of the camps would be in the vicinity of Goldfield and could have a significant impact in this small community. We feel that this impact also needs to be addressed in the socioeconomic section and how these impacts could be mitigated should be included.

Response
The EIS presents information for the counties within the designated region of influence (Clark, Nye, and Lincoln Counties) and the Rest of Nevada. The Rest of Nevada is an aggregate of the 14 remaining Nevada counties. The socioeconomic simulation model DOE used to estimate potential impacts indicated that the Rest of Nevada would experience direct economic effects from spending by construction workers for food and lodging.

The simulation accounts for workforce expenditures through the Eating and Drinking Sector and the Construction Sector of the Standard Industrial Code. A small fraction of the spending for food and lodging was allocated to the Rest of Nevada to account for the possibility that a few workers could or purchase food in Goldfield or other counties not in the region of influence.

The simulations assumed that construction camp development and water drilling would be contracted to firms in the counties where the camps were located. It was assumed that all railroad construction workers would commute weekly from Clark County to camps outside Clark County and eat in local restaurants 5 days per week, 50 weeks per year.

Subsequent environmental studies would further assess transportation scenarios in more detail to support decisions on preferred transportation corridor alignment and any necessary mitigative actions.

8.11.6 (1000)
Comment - EIS000235 / 0007
The Final EIS should include an evaluation of existing emergency medical capabilities in Lincoln County and provide recommendations for needed enhancements.

Response
Section 3.1.7.5 of the EIS provides information on health care and hospitals within the region of influence. Lincoln County has one hospital, in Caliente. Table 3-29 lists hospital use in the region.

However, DOE will not presume to speculate on what agencies feel that they might need to do to serve their citizenry. Section 116(c) of the NWPA states that "the Secretary shall provide financial and technical assistance to [an affected unit of local government or the State of Nevada]…to mitigate the impact on such [an affected unit of local government or the State of Nevada] of the development of [a] repository and the characterization of [the Yucca Mountain] site." Such assistance can be given to mitigate likely "economic, social, public health and safety, and environmental impacts." Within that broad framework, neither Section 116 nor any other provision of the NWPA limits the impacts that are subject to assistance under Section 116 to the environmental impacts considered in this EIS.

Under the NWPA, the Section 116 impact assistance review process and the EIS process are distinct from one another, and the implementation of one is not dependent on the implementation of the other. Thus, the provision of assistance under Section 116 would not necessarily be limited either by the impacts identified in this EIS or by its

findings on such impacts. Any decision to provide assistance under Section 116 would be based on an evaluation of requests for assistance submitted by an affected unit of local government or the State of Nevada pursuant to Section 116 to document likely economic, social, public health and safety, and environmental impacts. If the proposed repository was to become operational, DOE would enter into discussions with the State of Nevada and affected units of local government and consider appropriate support and mitigation measures.

After a decision was made regarding the proposed repository and transportation modes and routes, local jurisdictions would be better able to identify the likely economic, social, public health and safety, and environmental impacts that would be the basis for a request for economic assistance, which could include assistance in providing additional medical and emergency response facilities, under Section 116(c) of the Act.

Further, in the Final EIS, DOE has expanded its socioeconomic discussions in Chapter 3 to provide a clarified basis for understanding the magnitude of potential impacts described in Chapters 4 and 6. This discussion includes a projection of baseline parameters through 2035 based on the most recently available information and assumptions.

8.11.6 (1241)
Comment - EIS000226 / 0004
Page 30 of the County/City EIS Scoping Report provided a range of estimates of the population and demand for housing which would be induced by a range of new jobs. While the DEIS estimates the number of jobs which might be associated with intermodal activities in Caliente, rail line construction in the County and operation of heavy-haul trucks across Lincoln County, no estimate of induced population and related demands for housing and other public services (i.e., schools) is provided.

Response
The document cited in this comment is one of many DOE reviewed before preparing the Draft EIS. DOE estimates provided in the EIS for employment and population growth (including indirect population) in Lincoln County associated with the Yucca Mountain Project align most closely with the upper-case estimates in the scoping report (DIRS 104630-YMP 1997). The Department estimated about 237 total operations jobs for the Caliente-Chalk Mountain options. Of this total, DOE assumed that half the drivers and private escorts and other indirect employees (about 133 total) would work in Lincoln County. In the Final EIS DOE estimated a population increase of about 166 in Lincoln County. DOE does not believe, however, that this represents an impact that could stress local housing or infrastructure because it does not expect the need for in-migration to fill most of the jobs. DOE estimates of incremental changes in employment include direct and indirect jobs and population increases due to Yucca Mountain activities.

DOE has revised its socioeconomic estimates for Lincoln County to reflect population estimates from the Nevada State Demographer. The Department has reviewed pertinent information and revised its analyses of demands for public services and infrastructure in light of the identified repository-induced population changes.

8.11.6 (3145)
Comment - EIS000642 / 0002
Some issues that have not been addressed in the EIS properly. And these are to deal with the fact of socioeconomics for this part of the world. We rely on mining and ranching at this point in this part of the country for survival. This project that you are proposing threatens our way of life forever.

Response
DOE developed a list of assumptions to determine the projected economic and demographic changes in Nevada by construction and operation of the proposed repository. The REMI model used in these determinations is a four-region model. Three of the regions are Clark, Nye, and Lincoln Counties. The fourth region is the Rest of Nevada, an aggregation of the other 14 counties in Nevada (including Lander County).

DOE assumed, for railroad construction, workers would be nominally assigned to base camps according to an even split by the number of camps. All railroad construction workers would commute weekly from Clark County to the trailer camps outside Clark County and would eat in local restaurants 5 days per week, 50 weeks per year. Operations workers would live in the county where the branch rail line branched off the main line, with the exception of the Carlin routes, for which they would live in Elko, Nevada.

Given the above assumptions, the total estimated incremental population increase for the aggregated 14 counties in Nevada attributed to the Carlin Corridor would be about 115 individuals in the peak year. Total employment associated with the Carlin Corridor for the aggregated 14 counties of Nevada, including Lander County, for the peak year would be about 75. The Department does not believe there would, therefore, be any discernible direct or indirect impacts to the economy (including mining and ranching) or to the infrastructure (such as public safety or recreation) for any of the counties, including Lander County.

8.11.6 (3147)
Comment - EIS000642 / 0004
There are many people here in Nevada who are into ranching and that is their way of life and their only way of life, and we are all very concerned on this. Will the grazing allotments be cut up? How will the ranchers be compensated for the lost rangeland?

I want to expand on that a little bit. I am very concerned about the issue of water rights and the loss of land in our state.

Response
At this time, definitive information is not available on specific tracts of land that could be required for a given transportation alternative. For any land that would be required or otherwise affected, the Department would fairly compensate landowners under Federal acquisition procedures. Should DOE be required to exercise its right of eminent domain, it would do so pursuant to applicable laws and regulations.

8.11.6 (4216)
Comment - EIS001160 / 0033
The DEIS does not adequately address issues raised and substantiated by White Pine County during the scoping process. For example:

DOE is encouraged to make use of the White Pine County Economic Impact Model in preparation of the repository EIS. DOE did not utilize the White Pine County Economic Impact Model despite said model having been given to the Department. The DEIS does not include an assessment of economic or fiscal impacts in White Pine County.

Response
The EIS presents information for the counties in the defined region of influence (Clark, Nye, and Lincoln Counties) and for the Rest of Nevada, which is an aggregate of the 14 remaining Nevada counties (including White Pine County). Any economic impacts on White Pine County would be an indirect impact caused by DOE employment and expenditures in neighboring Lincoln County or in the Rest of Nevada. For example, Section 6.3.3.2.2 of the EIS discusses socioeconomic impacts of the construction and operation of an intermodal transfer facility in Caliente for the Caliente/Chalk Mountain heavy-haul truck route. The socioeconomic simulation model DOE used to estimate potential impacts indicated that the Rest of Nevada would experience relatively small direct economic effects from permit fees paid to the State for the operation of a facility such as an intermodal transfer station. The estimated total employment increase due to direct and indirect jobs for the entire Rest of Nevada for the Caliente and Caliente/Las Vegas heavy-haul truck route (14 counties) could be up to 38 jobs during construction and up to 26 jobs during operations. The impacts to White Pine County, if any, would be small.

8.11.6 (4239)
Comment - EIS001160 / 0054
White Pine County is concerned that there is no review of potential state-wide impacts, how changes in regional economic trends might impact neighboring counties, or impacts that could occur in counties along proposed transportation routes. It is not possible to suggest specific positive or negative impacts to White Pine County without initial analysis on anticipated state and regional impacts. In addition, the DEIS should include a separate review and analysis of impacts to communities along transportation routes once they have been selected. The FEIS should commit to such an analysis and the related identification of mitigation measures.

All communities with the state could be impacted by changes in the economic picture for the entire state because of the repository. The DEIS provides no assessment of the impacts to counties and cities from losses in state-level economic and fiscal activity. The State of Nevada Nuclear Waste Project Office has demonstrated the potential for

statewide tourism related economic and fiscal impacts as a result of nuclear waste being transported throughout the state and stored at Yucca Mountain. State sales and gaming tax revenues could be reduced, and this would impact state services and funds available to counties and cities for local services. It is also possible that the fact that high level nuclear waste is being transported on Nevada highways may influence motor freight routes. Communities like Ely receive a significant economic benefit from the increasing amount of truck traffic over US Highway 93 and State Route 318. If trucking firms elected to use Interstate 15 instead to avoid the routes used for high level nuclear waste, then our communities and the state as a whole would feel an economic impacts. Each of these key issues needs to be addressed in the FEIS.

Positive and negative impacts in neighboring counties including Lincoln, Nye, and Eureka Counties could indirectly impact White Pine County. Moderate increases or decreases in population and economic strength in Eureka, northern Nye, and northern Lincoln Counties could impact White Pine. These areas currently depend, at least in part, on Ely as a commercial and professional center. Decreases in their economies could reduce White Pine County's economic activity from its neighboring counties. Increases in population and activity could increase the economic activity in White Pine County. If the increases in the neighboring areas were significant enough to support development of new commercial and professional activity, it could decrease the activity now coming to White Pine County. These connected actions or impacts have not been considered within the DEIS.

It is possible that selection of transportation routes through White Pine County could result in socioeconomic impacts for White Pine County. If the presence of trucks hauling high-level nuclear waste in White Pine County required new state and/or federal employees in the area, their households would generate revenue in the community. New private sector ventures could be warranted to provide parking areas or shuttle services between parking and motels. However, the negative impacts of the presence of high-level nuclear waste could include reduced tourist traffic to White Pine County attractions, reduced customers for businesses located along the transportation routes or near the parking areas, reluctance of lenders to finance projects located within the corridor because of potential environmental hazards or increased risk perceived for the area; and regulations governing the use of areas along the transportation route could deter future land use decisions on mining, grazing, or tourism/recreation projects. The identification and analysis of impacts to the local economy in White Pine County and the City of Ely need to be included within the DEIS. Absent such analyses and identification of appropriate measures to mitigate impacts, potential effects will go unmitigated. Such an outcome is inconsistent with the intent of NEPA [National Environmental Policy Act]. The limited discussion regarding Clark, Lincoln, Nye, Eureka, Lander, and Esmeralda Counties does not show the true picture of impacts White Pine County could expect from the development of Yucca Mountain to store high level nuclear waste.

Response

The economic and demographic simulations that DOE performed using the REMI EDFS-53 forecasting and simulation model derived fiscal changes to the economy from interindustry relationships (including the eating and drinking places and hotel sectors of the Standard Industrial Code), labor markets, and national and worldwide economic variables. The analyses considered the entire State of Nevada. DOE structured the information presented in the EIS into four regions – Clark, Nye, and, Lincoln Counties, and the Rest of Nevada. The Rest of Nevada comprises the 14 remaining Nevada counties (including White Pine County and the Ely Shoshone Tribe). DOE estimated the potential impacts of each alternative on the same economic parameters for each region. Economic impacts on White Pine County would be indirect, caused by DOE employment and expenditures in neighboring Lincoln County or in the Rest of Nevada. For example, Section 6.3.3.2.2 of the EIS discusses the socioeconomic impacts of the construction and operation of an intermodal transfer facility in Caliente for the Caliente/Chalk Mountain route. The socioeconomic simulation model that DOE used to estimate potential impacts indicated that the Rest of Nevada would experience relatively small direct economic effects from permit fees paid to the State for operation of an intermodal transfer facility. The estimated total employment increase in total jobs (direct and indirect) for the Rest of Nevada (all 14 other counties) could be up to 37 jobs during construction and up to 18 jobs during operations. Impacts to White Pine County, if any, would be small.

Assessing the perceived impact on quality-of-life variables or the impact of "stigma" is generally problematic because it does not necessarily depend on actual physical effects or risks of the proposed action, but on the negative perception of those effects or risks by the public. While DOE agrees stigmatization could result in adverse impacts under some scenarios, it is not inevitable or measurable and stigmatization would likely be an aftereffect of

unpredictable future events. As a consequence, DOE addressed but did not attempt to quantify potential impacts from risk perceptions or stigma in the EIS. This issue is discussed in Section 2.5.4 and Appendix N of the EIS.

8.11.6 (4290)
Comment - EIS001160 / 0098
Page 4-88. The analysis on Section 4.1.15.4 should have considered the economic impacts of locating one or more cask manufacturing facilities at a greenfield site in Nevada, particularly, White Pine County. Such a facility might serve to mitigate potential negative economic impacts in the area.

Response
The EIS presents information for the counties in the defined region of influence (Clark, Nye, and Lincoln Counties) and the Rest of Nevada (including White Pine County). The Rest of Nevada comprises the 14 remaining counties. Economic impacts on White Pine County would be indirect, caused by DOE employment and expenditures in neighboring Lincoln County or in the Rest of Nevada. The socioeconomic simulation model DOE used to estimate potential impacts indicated that the Rest of Nevada would experience relatively small direct economic effects from permit fees paid to the State for operation of an intermodal transport facility. The estimated total employment increase in total jobs (direct and indirect) for the Rest of Nevada could be up to 38 jobs during construction and up to 26 jobs during operations. Impacts to White Pine County, if any, would be small.

While the details of cask manufacturing facilities are not known at present, they probably would not be DOE facilities. In all probability, private firms would manufacture the casks and, therefore, DOE would not control their location.

Section 4.1.15 of the EIS provides information on potential environmental impacts from manufacturing repository components.

8.11.6 (5483)
Comment - EIS001660 / 0019
Public services information is incorrect and incomplete (p. 3-115). Counties referenced only include 6 out of 10 affected units of local government. The DEIS implies all small communities in Nevada contain community water, sewer services, wells or septic tanks. Small communities may provide these services; however, have very limited access to sufficient quantities of water.

Response
DOE has expanded the discussions of public services in Sections 3.1.7.5 and 3.2.2.1.6 of the EIS. Results of the EIS analysis indicated that not all counties initially named as affected units of local government would experience impacts from the Proposed Action.

8.11.6 (5501)
Comment - EIS001660 / 0027
The DEIS does not adequately address specific community, local government, statewide, and regional impacts. Except for a discussion of the direct and indirect impacts from construction on disposable income and the Gross Regional Product, the DEIS fails to address the impacts of the proposed action on Mineral County's economy (pp. 6-l3,-l4,-37,-64). Mineral County's economy depends on mining, construction, military, transportation, agriculture and service industries (see "Hawthorne Facts at a Glance/Winter 1999" for more information about Mineral County's economy). The DEIS must address: (1) the anticipated impacts - positive and negative - upon the mining, construction, military transportation, agriculture and service industries, and (2) the anticipated impacts on the agricultural economy. The DEIS must address the anticipated economic impacts of shared use of alternative routes by the DOE and by other users, such as mines.

Response
DOE does not expect direct impacts of repository operations to Mineral County because none of the candidate transportation corridors are in the county. The closest candidate branch rail line would be in the Carlin Corridor, approximately 32 kilometers (20 miles) to the east in Nye County.

DOE estimated the incremental impacts at the county level for Clark, Lincoln, and Nye Counties, and for the remaining 14 Nevada counties together. The Department used the REMI EDFS-53 Forecasting and Simulation Model. The model segments age, ethnicity, and gender based on 600 cohorts to predict population. In addition, it calculates births, deaths, and aging. Employment and fiscal changes to the economy are derived from interindustry relationships, labor markets, and national and worldwide economic variables. Based on the results of the model outputs, DOE does not believe incremental increases in socioeconomic parameters represent large or widespread economic impacts.

DOE would consider sharing the selected transportation corridor with others such as mine operators and private freight shippers. This could benefit communities near the transportation route. Sections 8.2.1 and 8.4.2.1 of the EIS discuss the idea of shared branch rail lines.

8.11.6 (5513)
Comment - EIS001660 / 0031
The DEIS does not adequately address specific community, local government, statewide, and regional impacts. Also, it fails to address the fiscal impacts of the proposed action on Mineral County and other local governments (p. 6-37). Mineral County has a very limited property and sales tax base, and a volatile mining economy. For these reasons it is very difficult to provide essential services and infrastructure related to fire suppression, emergency response, water and sewer, law enforcement, education, etc.; and the County would have very limited resources to defend itself against any litigation which may arise. The DEIS must evaluate the projected local revenues and expenses associated with alternative routes, considering both direct and indirect effects. Other possible impacts include: (1) fiscal impacts to local emergency response agencies, including costs of training and maintaining personnel; and (2) the fiscal effects of potential litigation related to Mineral County's emergency first response, or lack thereof, to an accident involving transportation of SNF [spent nuclear fuel] and HLW [high-level radioactive waste] along the proposed alternate routes.

Response
DOE does not expect direct impacts of repository operations to Mineral County because none of the candidate transportation corridors are in the County. The closest candidate branch rail line would be in the Carlin Corridor, approximately 32 kilometers (20 miles) to the east in Nye County.

DOE estimated the incremental impacts at the county level for Clark, Lincoln, and Nye Counties, and for the remaining 14 Nevada counties together. The Department used the REMI EDFS-53 Forecasting and Simulation Model. The model segments age, ethnicity, and gender based on 600 cohorts to predict population. In addition, it calculates births, deaths, and aging. Employment and fiscal changes to the economy are derived from interindustry relationships, labor markets, and national and worldwide economic variables. Based on the results of the model outputs, DOE does not believe incremental increases in socioeconomic parameters represent large or widespread economic impacts.

As required by Section 180(c) of the NWPA would provide technical assistance and funds to states for training public safety officials of appropriate units of local government and tribes through whose jurisdictions it would transport spent nuclear fuel and high-level radioactive waste. This training would cover procedures required for safe routine transportation of these materials and for dealing with emergency response situations. In addition, Sections 116(A) and 117(c)(5) of the NWPA establish assistance guidelines covering a number of issues including emergency response, health baseline studies, and monitoring.

8.11.6 (5524)
Comment - EIS001660 / 0036
The DEIS does not adequately address the impacts of the proposed action on public services in Mineral County and other counties. Mineral County provides public services such as education, libraries, public health administration, police, fire protection, etc. The DEIS must analyze the direct and indirect impacts of the proposed action on education and other essential public services. Specifically, the DEIS must address the demand on public services and associated costs. The discussion of impacts on public services of the Nevada transportation alternatives, both rail and road, is particularly inadequate regarding emergency response services. The type, capability, and availability of such services, and local government attitudes toward response to radiological incidents vary widely in

the affected counties. Additional risks, costs, training, and management issues regarding emergency response must be included in the DEIS.

Response
DOE estimated the potential incremental changes to a projected baseline for a number of socioeconomic and transportation parameters. The estimates were based on a range of reasonable assumptions and input variables such as where transportation workers would live and the number of waste shipments required. In the Final EIS, the projected baseline is shown through 2035. DOE expects that most of the potential impacts would occur in Nye, Clark, and Lincoln Counties. In most cases, DOE does not believe the incremental changes in population and employment would appreciably influence the level of community services. However, DOE would monitor its activities and consider reasonable mitigation actions should it be required.

Section 116(c) of the NWPA provides a non-National Environmental Policy Act process by which DOE can provide compensation to the State of Nevada and affected units of local government from impacts of developing the proposal. Section 180(c) of the NWPA establishes a process by which DOE can provide technical and funds for training to states, local governments, and tribes for training in safe transport methods and emergency response.

8.11.6 (5616)
Comment - EIS001887 / 0242
Page 4-44; Section 4.1.6.2.5 - Impacts to Public Services

The analysis of impacts to public services in the Draft EIS is inadequate and incomplete. The Draft EIS fails entirely to examine the effects of the Proposed Action on State-level public services and State agencies. A June 1998 report prepared for the State of Nevada found that costs to State agencies alone for preparing for and responding to repository-related shipments of spent fuel and HLW [high-level radioactive waste] in Nevada would be almost $498 million for the first three years of the project.(33)

The Draft EIS also fails to adequately assess costs and impacts to local governments for preparing for nuclear waste shipments, training response and other emergency preparedness personnel, obtaining necessary equipment, and related activities. Interjurisdictional impacts resulting from the nature of the emergency response systems in Nevada, the existence of and need for inter County mutual support agreements, multi County training requirements, etc. would also occur. Such costs are direct impacts associated with the Proposed Action and should have been clearly identified and assessed in the Draft EIS.

Public service impacts should be calculated on a use/revenue basis for: (1) services provided to the Yucca Mountain project by state, local, and private utilities (subject to market and service regulation, e.g., electric, water, gas, etc.); (2) services provided to employees and their households; (3) services required by the indirect and multiplier effects of the project and project employees; and (4) services by state and local governments that are mandated by federal law or represent official responses by state and local officials and agencies to the activities of the Yucca Mountain project. The public services to be assessed should include:

- All state and local government services that contribute to the Yucca Mountain project. This would include services for health and safety, emergency management and response, transportation, regulation (e.g., permitting, licensing, and oversight), legal and judicial actions, and support for the public infrastructure.

- State and local public services to the direct, indirect, and induced population and households resulting from the Yucca Mountain project, including the proportional and marginal costs for education, police and public safety, criminal justice, libraries, recreation and parks, local transportation, welfare, and publicly mandated services such as economic development. The cost estimates should include expenses for all community services, facilities, equipment, infrastructure, and staff.

The assumption in the Draft EIS that public services impacts related to the Proposed Action would be small in comparison to the overall employment and population of the region of influence does not mean that impacts cannot or will not be significant. Without a complete assessment, the significance of these impacts cannot be known.

Because the State's tax and revenue systems rely on tourism/gaming revenues to pay for growth in other sectors, public services impacts associated with additional repository-related population growth would generate negative fiscal impacts for state and local jurisdictions. Although such negative fiscal impacts would result from any non-gaming industry economic development, there is a distinction between the state's willingness to subsidize desired economic diversification and its willingness to subsidize the fiscal effects of a repository. As such, public services impacts and costs must be identified under the provisions of NEPA [National Environmental Policy Act] and the NWPA.

(33) "The Fiscal Effects of Proposed Transportation of Spent Nuclear Fuel on Nevada State Agencies," by Planning Information Corp. and Alvin Mushkatel, Arizona State University (June, 1998).

Response
DOE did not assess potential fiscal impacts at an agency level. DOE does not believe this would provide meaningful or discriminating information for the decisionmaker. DOE did, however, estimate the potential impacts at the county level for Clark, Nye, and Lincoln Counties. The remaining 14 counties in Nevada were considered aggregately.

DOE estimated the potential impact of each alternative on the same economic parameters for each of the regions. The economic and demographic simulations performed by the Department, using the REMI EDFS-53 Forecasting and Simulation Model, derived fiscal changes to the economy from interindustry relationships (including the Eating and Drinking Places and Construction Sectors of the Standard Industrial Code), labor markets, and national and worldwide economic variables. The simulations included direct and induced impacts based on changes in employment and population. One of the parameters evaluated was change in State and local spending, which captures some of the issues raised in the comment. For example, security support from the State Highway Patrol is factored into the simulations for each rail corridor.

Regarding possible agency support or response to repository activity, DOE will not presume to speculate on what agencies feel that they might need to do to serve their citizenry, nor will DOE presume to comment on the State's preferred fiscal structure. DOE will, however, enter into discussions with potentially affected units of government and consider appropriate support and mitigation measures. As required by Section 180(c) of the NWPA, DOE would provide technical assistance and funds to states for training for public safety officials of appropriate units of local government and Native American tribes through whose jurisdictions it would transport spent nuclear fuel and high-level radioactive waste. Training would cover procedures required for safe routine transportation of these materials, as well as procedures for dealing with emergency response situations. In addition, Sections 116(A) and 117(c)(5) of the NWPA set forth assistance guidelines covering a number of issues including emergency preparedness and response, state liability arising from accidents, and necessary road upgrading.

In addition, Payments-Equal-to-Taxes (PETT) are made pursuant to Section 116(c)(3)(A) of the NWPA, which requires the Secretary of Energy to "... grant to the State of Nevada and any affected unit of government, an amount each fiscal year equal to the amount such State or affected unit of government, respectively, would receive if authorized to tax site characterization activities..." These payments, historically and for the future, are determined by estimating the amount of Yucca Mountain Project property, purchases (inside and outside the State of Nevada), and business activities (employees) within the jurisdiction of an affected unit of local government. Nye County and the State of Nevada have been eligible to receive PETT since commencement of site characterization activities in May 1986. The other affected units of government include Clark, Lincoln, Esmeralda, Eureka, White Pine, Churchill, Lander, and Mineral Counties in Nevada, and Inyo County, California. Potentially, they have been eligible to receive PETT since Congress passed the Nuclear Waste Policy Amendments Act of 1987.

For PETT relating to property taxes in Nye County, DOE and the County entered into a settlement agreement, amended in May 1999, whereby DOE would make specified payments on a fixed disbursement schedule. The current agreement runs through 2003.

8.11.6 (6053)
Comment - EIS001898 / 0014
Additional documentation or analysis should be provided in the FEIS to support the characterization of impacts and the description of environmental parameters in some areas of the FEIS.

Section 6.3.2.2.1 (Environmental Impacts of Transportation Caliente Rail Corridor Implementing Alternative-Socioeconomics) states "[t]he projected length of the corridor-513 kilometers is the most important factor for determining the number of workers (560) that would be required." This statement is repeated for all corridors, but more specific information is needed to support this conclusion. Terrain and other factors might have significant impact, because productivity per worker (km/worker) varies considerably by route (e.g., 1.04km/worker on the Carlin route, 0.53km/worker on the Jean route).

Response
This comment takes issue with Section 6.3.2.2.1 of the EIS, which indicates "[t]he projected length of the corridor – 513 kilometers (319 miles) – is the most important factor for determining the number of workers [560] that would be required." Because DOE based the identification of the alternative corridors on a range of factors including land ownership, engineering, and terrain or steepness of grade, the length of the corridor inherently reflects of the weighing and balancing of these other factors. As a consequence, the length of a branch rail line would influence the number of workers required and worker productivity because of the engineering requirements and possible routing constraints in the initial layout of the corridor.

With regard to the socioeconomic analyses in which the cited statement appears, the number of workers is the fundamental parameter for estimating other potential changes to the economy such as Gross Regional Product, disposable income, and State and local spending.

8.11.6 (6303)
Comment - EIS001727 / 0012
The DEIS doesn't make any effort to assess the socioeconomic impacts of transportation other than the number of people that have to work on the trucks.

Response
The EIS assesses the socioeconomic impacts for each transportation scenario. Sections 6.3.2.2 and 6.3.3 provide socioeconomic impact estimates for each rail corridor and heavy-haul truck route, respectively.

The analysis for each alternative estimated the projected change in a number of socioeconomic parameters including employment, population, State and local spending, disposable income, and Gross Regional Product. It compared the changes associated with Yucca Mountain activities to projected baseline growth trends and economic activity for each potentially affected county (Clark, Lincoln, and Nye) and the Rest of Nevada (the 14 remaining Nevada counties).

8.11.6 (6380)
Comment - EIS001590 / 0005
It does not address properly socioeconomic impacts. For example, what would be the effect in communities along the transportation route of an accident of having the potential for an accident. This is something that my neighbors in the Rum Village Neighborhood Association along the route are very, very concerned about.

Response
DOE analyzed a range of accident scenarios related to proposed transportation activities and the accident risk would be very small. Accident scenarios analyzed in the EIS are based on probabilities with no definitive knowledge of when or where an accident could occur. As a consequence, to attempt to assess the potential impacts of an accident to a local economy would be highly speculative. The EIS does, however, address the potential socioeconomic impacts that could occur, directly or indirectly, as a result of the proposed siting, construction, operation and monitoring, and eventual closure of a geologic repository at Yucca Mountain, including transportation activities. The socioeconomic parameters considered in the EIS include quantitative estimates of changes to populations, employment, and income that could result from repository-related activities.

8.11.6 (6434)
Comment - EIS001828 / 0005
The population element in the DEIS should also include visitors to our county. More than 32 million tourists annually augment the population of the metro Las Vegas area, situated directly along the proposed truck route.

Response
Section 3.1.7.1 of the Draft EIS identified the annual number of visitors to Las Vegas. DOE has updated this number in the EIS and included it in the analysis of transportation accident health effects.

8.11.6 (6675)
Comment - EIS001878 / 0054
Except for a discussion of the direct and indirect impacts from construction on disposable income and the Gross Regional Product, the DEIS fails to address the impacts of the proposed action on the economy of Eureka County. (pp. 6-13, -14, -37, -64) The County's economy depends heavily on mining. Construction, agriculture, government, and services are the next largest sectors.

The statement (p. 3-115) that "[s]ocioeconomic effects from the construction of a rail line would be small and, for the most part, short-term," which the DEIS uses to justify the inclusion of less-detailed information for Esmeralda, Eureka, and Lander Counties, is unsupported by any evidence and does not allow an adequate analysis of the impacts of the rail alternatives.

Specifically, the DEIS must address: (1) the anticipated impacts--positive and negative--upon the mining, construction, government, and service sectors and (2) the anticipated impacts on the agricultural economy. The DEIS must address the anticipated economic impacts of shared use of the Carlin rail corridor by the DOE and by other users, such as mines.

Response
A relatively short section of the Carlin Corridor crosses Eureka County from Beowawe through Crescent Valley. DOE developed a list of assumptions to determine projected economic and demographic changes in Nevada from the construction and operation of the proposed repository. The REMI model that DOE used in these determinations is a four-region model. Three of the regions are Clark County, Nye County, and Lincoln County. The fourth region is the Rest of Nevada, which includes the other 14 counties (including Eureka County).

For railroad construction, DOE assumed that workers would be assigned to base camps according to an even split by the number of camps. Railroad construction workers would commute weekly from Clark County to the trailer camps outside Clark County and would eat in local restaurants 5 days a week, 50 weeks a year. Operations workers would live in the county where the route branched off the main line, with the exception of the Carlin routes, for which they would live in Elko County.

Given these assumptions, the total estimated population increase, as reported in the Draft EIS, for the aggregated 14 counties in Nevada attributed to the Carlin Corridor would be about 115 individuals in the peak year. DOE does not believe this would cause discernible direct or indirect impacts to the public services of any of the counties including Eureka.

In relation to possible benefits of the branch rail line, DOE would consider sharing transportation corridors with others such as mine operators and private freight shippers. This could benefit communities near the transportation routes. Sections 8.2.1 and 8.4.2.1 of the EIS discuss the idea of shared branch rail lines.

8.11.6 (6687)
Comment - EIS001878 / 0058
The DEIS fails to adequately address the impacts of the proposed action on housing in Eureka County. The housing data provided (p. 3-115) is 10 years old. Due to such factors as the high percentage of public land, the variability of the mining economy, and the high cost of raw materials, Eureka County has unique housing problems that could be aggravated by the proposed action, particularly during the construction phase. Construction would require an annual average of 500 workers (p. 6-63) in a county with only 820 housing units as of 1990 (p. 3-115). Thus, housing impacts could be quite severe.

The DEIS must disclose the anticipated impacts of the proposed action on Eureka County's housing stock. The disclosure must include direct impacts (e.g., housing of construction crews) and indirect impacts (e.g., increased demand for housing, short-term and long-term, resulting from the multiplier effect from rail corridor construction).

Response
A relatively short section of the Carlin Corridor crosses Eureka County from Beowawe through Crescent Valley. DOE developed a list of assumptions to determine projected economic and demographic changes in Nevada from the construction and operation of the proposed repository. The REMI computer model that DOE used in these determinations is a four-region model. Three of the regions are Clark County, Nye County, and Lincoln County. The fourth region is the Rest of Nevada, which includes the other 14 counties (including Eureka County).

For railroad construction, DOE assumed that workers would be assigned to base camps according to an even split by the number of camps, and that these base camps would be constructed by a local subcontractor and would include an adequate number of trailers to house the workforce. Railroad construction workers would commute weekly from Clark County to the trailer camps outside Clark County and would eat in local restaurants 5 days a week, 50 weeks a year. Operations workers would live in the county where the route branched off the main line, with the exception of the Carlin routes, for which they would live in Elko County.

Given these assumptions, the total estimated population increase, as reported in the Draft EIS, for the aggregated 14 counties in Nevada attributed to the Carlin Corridor would be about 115 individuals in the peak year. Total employment associated with the Carlin Corridor for the 14 counties, including Eureka, for the peak year would be about 75. DOE believes there would be no discernible direct or indirect impacts to housing for any of the counties including Eureka. The housing information in the EIS is based on the most current information available. The Bureau of the Census updates housing information on a county basis only every 10 years. DOE had modified this information as more timely data became available. Fifty households would represent about 4.8 percent of Eureka County's 2000 housing stock.

8.11.6 (6689)
Comment - EIS001878 / 0059
The DEIS fails to adequately address the impacts of the proposed actions on infrastructure in Eureka County. The County and its residents provide (and depend upon) roads, schools, drainage, water systems, aviation facilities, medical facilities, and public safety facilities that could be affected, directly or indirectly, by the proposed action.

The DEIS must disclose the anticipated impacts of the proposed action on Eureka County's infrastructure. The disclosure must include direct impacts (e.g., damage or displacement of infrastructure during construction) and indirect impacts (e.g., increased demand on infrastructure due to construction employment). Specifically, the DEIS must address the impact of the rail corridor on the Crescent Valley airport, which lies within the corridor.

Response
A relatively short section of the Carlin Corridor crosses Eureka County from Beowawe through Crescent Valley. DOE developed a list of assumptions to determine projected economic and demographic changes in Nevada from the construction and operation of the proposed repository. The REMI computer model that DOE used in these determinations is a four-region model. Three of the regions are Clark County, Nye County, and Lincoln County. The fourth region is the Rest of Nevada, which includes the other 14 counties (including Eureka County).

For railroad construction, DOE assumed that workers would be assigned to base camps according to an even split by the number of camps, and that these base camps would be constructed by a local subcontractor and would include an adequate number of trailers to house the workforce. Railroad construction workers would commute weekly from Clark County to the trailer camps outside Clark County and would eat in local restaurants 5 days a week, 50 weeks a year. Operations workers would live in the county where the route branched off the main line, with the exception of the Carlin routes, for which they would live in Elko County.

Given these assumptions, the total estimated population increase, as reported in the Final EIS, for the aggregated 14 counties in Nevada attributed to the Carlin Corridor would be about 115 individuals in the peak year. Total employment associated with the Carlin Corridor for the 14 counties, including Eureka, for the peak year would be about 75. DOE believes there would be no discernible direct or indirect impacts to housing for any of the counties, including Eureka.

At this time definitive information is not available on specific tracts of land that DOE could require for a particular transportation corridor. In relation to the commenter's concern about damage or displacement of infrastructure, the

Department would fairly compensate landowners under Federal acquisition procedures for land that would be required or otherwise affected. If DOE had to exercise its right of eminent domain, it would do consistent with applicable laws and regulations.

As indicated in Section 9.3.1 of the EIS, DOE would develop mitigation measures where construction and operation of transportation facilities would result in (1) impacts to publicly used lands, (2) direct and indirect land loss, and (3) displacement of capital improvements.

8.11.6 (6692)
Comment - EIS001878 / 0061
The DEIS fails to address the fiscal impacts of the proposed action on Eureka County and other local governments. (p. 6-37) With a very limited property tax base and sales tax base, and with a volatile mining economy, Eureka County and its residents must provide services and infrastructure related to fire suppression, emergency response, water and sewer, law enforcement, education, and others. The County must also defend itself in any litigation that may arise.

The DEIS must evaluate the projected local revenues and expenses associated with the Carlin corridor in Eureka County, considering both direct and indirect effects. Among other possible impacts, the DEIS must evaluate: (1) fiscal impacts to local emergency response agencies, including the costs of training and maintaining their personnel, and (2) the fiscal effects of potential litigation related to the County's emergency first response, or lack thereof, to an accident involving transportation of SNF [spent nuclear fuel] and HLW [high-level radioactive waste] along the Carlin corridor.

The estimates of local expenditures provided in the DEIS are so general that they are meaningless. They do not provide a viable basis for comparison, nor do they relate estimated expenditures to specific local government budgets. Thus, the information does not permit an examination of actual impacts on local governments and their budgets.

Response
A relatively short section of the Carlin Corridor crosses Eureka County from Beowawe through Crescent Valley. DOE developed a list of assumptions to determine projected economic and demographic changes in Nevada from construction and operation of the proposed repository.

As required by Section 180(c) of the NWPA, DOE would provide technical assistance and funds to states for training public safety officials of appropriate units of local government and tribes through whose jurisdictions it would transport spent nuclear fuel and high-level radioactive waste. Training would cover procedures required for safe routine transportation of these materials, as well as procedures for dealing with emergency response situations. In addition, Sections 116(A) and 117(c)(5) of the NWPA set forth assistance guidelines covering a number of issues including emergency response, health baseline studies, and monitoring.

8.11.6 (6694)
Comment - EIS001878 / 0062
The DEIS fails to evaluate the impacts of the proposed action on mining in Eureka County and neighboring counties. Mining is by far the largest sector of Eureka County's economy. The proposed Carlin corridor traverses an area potentially rich in mineral deposits, which may be needed to support the nation's economic development and national defense. According to testimony before the DOE at the Crescent Valley public hearing on December 9, 1999, the corridor would divide the existing Cortez mine, and cross a haul road that is in regular use.

The DEIS must evaluate the effects of the proposed action on mining, including: (1) possible restrictions on claimants' access to their mining claims, (2) division of mining claims, (3) possible physical and legal barriers to the exploitation of mineral deposits, and (4) potential benefits to mining from improved access to railroad service. The DEIS must also disclose whether restricted use of or access to mining claims and sites would be a taking of private property rights requiring compensation under the Constitution of the United States.

Response
DOE acknowledges that the Carlin Corridor passes near historic and established mining districts. In addition, the Department is aware of the Cortez Gold Mines operation in Crescent Valley. Sections 8.1.2.3 and 8.4.2 of the EIS discuss the Cortez Gold Mines and possible cumulative impacts.

As indicated in Section 9.3.1 of the EIS, DOE would develop mitigation measures where construction and operation of transportation facilities would result in (1) impacts to publicly used lands, (2) direct and indirect land loss, and (3) displacement of capital improvements. Such measures could most practically be developed after a single transportation corridor was selected and in conjunction with alignment of a route within the corridor.

In relation to possible benefits of a branch rail line, DOE would consider sharing transportation corridors with others such as mine operators and private freight shippers. This could benefit communities near the transportation routes. Sections 8.2.1 and 8.4.2.1 of the EIS discuss the idea of shared branch rail lines. In addition, DOE would evaluate the need for preserving access to land that a rail corridor could divide. The Department would try to minimize any restriction to or control over lands used for mining and would develop specific mitigation measures to alleviate impediments to the continued use of lands.

8.11.6 (6701)
Comment - EIS001878 / 0065
The DEIS does not adequately address the impacts of the proposed action on public services in Eureka County and other counties. Eureka County and the Eureka County School District provide public services including education, libraries, public health administration, police, fire protection, and others.

The DEIS must analyze the direct and indirect impacts of the proposed action on education and other essential public services. Specifically, the DEIS must address the demand on public services, and associated costs, that would be created by construction crews of 500 persons (annual average) and their families and support personnel.

Response
A relatively short section of the Carlin Corridor crosses Eureka County from Beowawe through Crescent Valley. DOE developed a list of assumptions to determine the projected economic and demographic changes in Nevada by construction and operation of the proposed repository. The REMI model used in these determinations is a four-region model. Three of the regions are Clark, Nye, and Lincoln Counties. The fourth region is the Rest of Nevada, an aggregation of the other 14 counties in Nevada.

DOE assumed, for railroad construction, each of the following: Workers would nominally be assigned to live in base camps according to an even split by the number of camps. All railroad construction workers would commute weekly from Clark County to the trailer camps outside Clark County and would eat in local restaurants 5 days per week, 50 weeks per year. Operations workers would live in the county where the route branched off the main line, with the exception of the Carlin routes in which case workers would live in Elko County.

Given the above assumptions, the total estimated population increase, as reported in the Draft EIS, for the aggregated 14 counties in Nevada attributed to the Carlin Corridor would be about 115 individuals in the peak year. The Department does not believe there would, therefore, be any discernible direct or indirect impacts to the public services of any of the counties, including Eureka.

8.11.6 (6705)
Comment - EIS001878 / 0067
The DEIS fails to consider the impacts of the proposed action on the quality of life now experienced by Eureka County's residents. The unique values of such communities as Crescent Valley include clean air, access to open space and recreation, active and passive enjoyment of fish and wildlife, quiet surroundings, enjoyment of nature, beautiful views and scenery, participation in the community life of a small town, the safety and security of a close-knit community, employment in agriculture and other outdoor occupations, and many others.

According to the written testimony of Jean Plummer, presented at the public hearing before the DOE on December 9, 1999, at Crescent Valley:

Beowawe and Crescent Valley, Nevada, might be considered townships with small populations, even if all the surrounding areas were included. Our land, though, has much natural beauty, good fishing, hunting, colorful spring flowers, canyons in the mountains, willows and cottonwood trees and streams winding through. Our children have a great school and a small community to grow up in. The Yucca Mountain project will destroy all of this within 25 years if not sooner.

The DEIS must consider the impacts of the proposed action on the quality of life in the communities in Eureka County and neighboring counties that would be affected--directly and indirectly--by the construction and operation of a rail line, access roads, fences, and supporting structures.

Response
The comment implies that actions associated with the proposed repository could negatively affect the quality of life in Eureka County. The EIS analysis in fact shows that expected impacts to Eureka County would be small.

While DOE agrees stigmatization could result in adverse impacts under some scenarios, it is not inevitable or measurable, and such stigmatization would likely be an aftereffect of unpredictable future events. As a consequence, DOE addressed but did not attempt to quantify potential impacts from risk perception or stigma in this Final EIS. See Section 2.5.4 and Appendix N of the EIS for additional information.

8.11.6 (6903)
Comment - EIS001539 / 0006
Current Data: The use of 1990 census data is inappropriate for the calculation of risks to Denver area residents. DOE should update their risk calculations with the most recent census data, as soon as they are available.

The DOE/EIS states that risks were calculated using 1990 census data. The Denver area has one of the fastest growing populations in the United States. As soon as possible, updated census data should be used in the calculation of risk estimates (e.g., population densities along each route, including railroads), and these data should be considered during the planning of waste shipment routes. The routes should be designed to minimize transport through areas of high population density.

Additionally, as the DOE/EIS states that potential risks from accidental release scenarios were calculated based on "state-specific accident rates" (pg. J-8), DEH [Denver Department of Environmental Health] encourages DOE to use the most recent data available, because the Denver area has recently experienced a large increase in automobile traffic.

Response
Based on comments received on the Draft EIS, DOE has revised the EIS to adjust transportation impacts for the Proposed Action to reflect projected changes in population from 1990 to 2035. For Modules 1 and 2, DOE adjusted the estimates for transportation impacts to incorporate projections made by the Bureau of the Census for populations in 2047.

In many instances DOE conducted special studies to collect additional data. For example, transportation accident and fatality rates were updated for the EIS in the report *State-Level Accident Rates of Surface Freight Transportation: A Reexamination* (DIRS 103455-Saricks and Tompkins 1999). These data represent the best available information for estimating transportation accident risks.

As required by the NWPA, DOE would comply with U.S. Department of Transportation regulations and requirements of the Nuclear Regulatory commission regarding routing of highway shipments of spent nuclear fuel and high-level radioactive waste. The Department of Transportation does not regulate routing of rail shipments. However, as required by the NWPA, DOE would use routes for rail shipments that are first approved for use by the Nuclear Regulatory Commission. DOE and its transportation contractors would work with railroad carriers to ensure that routes used were the safest and permitted expeditious transport of shipments of spent nuclear fuel and high-level radioactive waste.

8.11.6 (7205)
Comment - EIS001337 / 0090
Page 3-71 Section 3.1.7. The evaluation of impacts in Section 6 for transportation include impacts to real disposable income, gross regional product and government expenditures. In order to define magnitude of impact data for these parameters need to be included in the Affected Environment section of the DEIS.

Page 3-71 Section 3.1.7. The factors considered under socioeconomics is not adequate to enable a comprehensive assessment of impacts. At a minimum other factors needing to be included are age distribution of residents; other community services including water and waste water, solid waste, and emergency management and emergency medical services. Local government expenditures for these services needs to be considered. The baseline "without repository" projections of population, housing, employment, school enrollment, local government revenues and expenditures, and various community service capacities and demands should be at least through 2033 or better yet closure of the repository. Currently, the DEIS lacks sufficient information to enable a determination of the significance of impacts over projected without repository baseline to be determined.

Page 3-74 3rd paragraph. Text here indicates that Lincoln County had a 13 percent decline in employment between 1990 and 1995. The text should indicate what this was attributed to. This decline is inconsistent with the findings in Section 4, Environmental Consequences that a 1.9 to 5.8 percent increase in employment and population would be "within the range of historic changes in the county". Either the data in Section 3-74 in not accurate or the finding in Section 4 is inappropriate.

Page 3-76 Section 3.1.7.3. To enable a comparison with projected levels of PETT [Payments-Equal-to-Taxes] and to enable the reader to understand how past and future PETT levels were determined, the text here needs to explain how past PETT payment levels were derived, by County. The text should also identify any inconsistencies between derivation of PETT payments from one jurisdiction to another. Without such information any projection of PETT in Section is unsupported. (Section 4 does not provide any estimates of PETT payments and this is a deficiency in the DEIS.)

Page 3-77 Table 3-26. Because the text on Page 3-73 indicates that the population of Lincoln County will increase 2 to 4 percent per year during the next decade, an explanation is needed as to why school enrollments in Lincoln County are projected to decline between 1997 and 2001. These two trends appear inconsistent, unless there are extenuating factors (i.e. aging of the population, reduced birth rates, etc.). Because Section 3 includes school enrollment, Section 4 should include a projection of school age children resulting from population growth. In addition, Section 4 should consider the need for additional school facilities to accommodate enrollment growth.

Page 3-78 Table 3-27. The year 2000 population forecasts for Lincoln County are not consistent with those of the Nevada State Demographer (4,410).

Page 3-78 Health Care. The description of hospitals should indicate whether these facilities are currently capable of handling patients contaminated by radiation. In the case of the Grover C. Dils Medical Center in Caliente, that facility is currently not capable of effectively handling a patient contaminated with radiation.

Page 3-78 Law Enforcement. The description of law enforcement should indicate whether each police or sheriff department is currently trained and equipped to respond to emergencies involving radiation hazards. The Lincoln County Sheriff Department is not currently trained or equipped to respond to such a hazard.

Page 3-78 The description of fire protection and emergency management should indicate whether each department and/or jurisdiction is currently trained and equipped to respond to emergencies involving radiation hazards. None of the volunteer fire departments or emergency medical service providers in Lincoln are currently trained or equipped to respond to such a hazard.

Page 3-98 Section 3.2.1.1. The last sentence of this section indicates that population densities were derived to estimate health risks. The methodology used to estimate potentially impacted population as described on Page J-40 has resulted in an underestimation of population in rural areas such as Lincoln County. This results from the fact that population densities used were derived from Census Block data. In Lincoln County Census areas are very large relative to total population within the area. Most persons residing in the Census areas reside near to transportation

infrastructure. As a result, it is necessary to adjust population densities prior to multiplying each by the 1.6 kilometer region of influence. Research completed by the University of Nevada, Las Vegas, Transportation Research Center has documented the need to make such an adjustment in population density.[19] [These comments also apply to Page 3-114, Section 3.2.2.1.6]

[19] Sathisan, Shasi et. al., Risk Analysis for Spent Nuclear Fuel Transportation Through Lincoln County Volume I: Rail Shipments, Volume IIA: Highway Shipments, Volume IIB: Technical Appendix, Transportation Research Center, Howard Hughes College of Engineering, University of Nevada, Las Vegas, February 1995.

Response

DOE appreciates the breadth of this comment. The Final EIS reflects some of the issues and the following response categories or groups the issues by topic to better capture some of the commenter's diverse but related concerns. DOE has expanded its socioeconomic discussions in Section 3.1.7 of the EIS to provide a clarified basis for understanding the potential impacts described in Chapter 4. This discussion includes a projection of baseline parameters through 2035 based on the most recently available information and assumptions. Information on Gross Regional Product, government spending, and real disposable income has been included. DOE incorporated State Demographer population information for Lincoln County in the Final EIS. DOE has revisited population estimates by age to determine potential impacts on specific services, particularly schools. In the Final EIS, DOE provides a quantified estimate, to the extent possible, of school changes in enrollment and the status of law enforcement and public service personnel requirements.

- Employment Decline

  Regarding Lincoln County employment, the decline between 1990 and 1995 is primarily attributed to the services sector possibly related to the Nevada Test Site employment reductions during that time period. The reference to a 1.9- to 5.8-percent increase in employment and population pertains to long-term trends going back to the 1980s and encompasses the identified employment declines of the 1990s. DOE has clarified the text in the EIS to make this distinction.

- Payments-Equal-To-Taxes

  Payments-Equal-To-Taxes (PETT) are made pursuant to Section 116(c)(3)(A) of the NWPA, which requires the Secretary of Energy to "…grant to the State of Nevada and any affected unit of government, an amount each fiscal year equal to the amount such State or affected unit of government, respectively, would receive if authorized to tax site characterization activities…." Nye County and the State of Nevada have been eligible to receive PETT since commencement of site characterization activities in May 1986. The other affected units of local government include Clark, Lincoln, Esmeralda, Eureka, White Pine, Churchill, Lander, and Mineral Counties in Nevada, and Inyo County, California. Potentially, they have been eligible to receive PETT since the enactment of the amendments to the Nuclear Waste Policy Act in 1987.

  DOE acquires data from the Yucca Mountain Site project organizations that purchase or acquire property for use in Nevada, have employees in Nevada, or use property in Nevada. These organizations include Federal agencies, national laboratories, and private firms. Not all of these organizations have Federal exemption status so they pay the appropriate taxes. The purchases (sales and use tax), employees (business tax), and property (property or possessory use taxes) of the Yucca Mountain Project organizations that exercise a Federal exemption are subject to the Payment-Equal-To-Taxes Program (DIRS 103412-NLCB 1996).

  The age group 6 to 18 estimate (school age) drops about 25 percent between 2002 to 2011 and rises again, reaching its 2002 level in about 2020. DOE believes the direct and indirect impacts of transportation activities would result in helping restore the school-age population back to its previous levels.

- Emergency Response

  Regarding possible agency support or emergency response to repository activities, DOE does not presume to speculate on what agencies feel that they might need to do to serve their citizenry. If the proposed repository was approved for development, DOE would, however, enter into discussions with potentially affected units of

local government and consider appropriate support and mitigation measures. As required by Section 180(c) of the NWPA, DOE would provide technical assistance and funds to states for training for public safety officials of appropriate units of local government and tribes through whose jurisdictions it would transport spent nuclear fuel and high-level radioactive waste. Training would cover procedures required for safe routine transportation of these materials, as well as procedures for dealing with emergency response situations. In addition, Sections 116(c) and 117(c)(5) of the NWPA set forth assistance guidelines covering a number of issues including emergency response, health baseline studies, and monitoring.

- Populations and Health Risk

  The EIS used U.S. Census data to estimate the number of people in the general population who would live near the highway and rail routes that were selected for analysis. However, it was not possible or practical to identify each special population that would be in each of the thousands of Census blocks crossed by the routes and analyzed. However, the use of Census data for population along real routes selected for the analysis ensured that estimated impacts would be calculated for the health and safety of real people—not generic populations along generic routes. Because populations resident in care facilities for the elderly are included in Census data, the analysis included the impacts to these populations. Furthermore, impacts to temporary occupants of schools and hospitals that would be near routes and whose temporary occupancy is not included in Census data were included in the analysis, because the analysis assumed that adults, children, and hospital patients would be present in their homes when every shipment passed. Thus, while it is certain that the approach of using Census data to estimate the number of people who would be exposed to passing shipments leaves some uncounted, it is also certain that the analysis counted some who would not be affected. For the purpose of estimating health and safety risks to populations along routes, the approach provides reasonable estimates and does not exclude special populations.

8.11.6 (7242)
Comment - EIS001337 / 0116
Page 6-96 Socioeconomic Section discusses the impacts of heavy-haul of the large rail casks - This section fails to address potential impacts to the quality of life of residents living along highways in the rural communities resulting from 4-5 of these large trucks, along with their remaining convoy, traveling communities every day for 24 years. This area needs to be addressed by DOE. One method to mitigate this impact would be to construct heavy haul by-passes around these communities working with each community as to where by-pass should be located.

Response
If the repository was approved, subsequent environmental studies would assess route alignment in more detail to support decisions and identify possible mitigation measures.

8.11.6 (7633)
Comment - EIS001912 / 0085
Why not include other countries in the socioeconomic section? What makes Clark and Lincoln different except for the possibility of employment opportunities. How are the impacts from transportation different? The northern Nevada rail route crosses through several large urban areas. About 80 percent of Elko County's population lives within the Humboldt River corridor and adjacent to the existing rail line.

Response
All counties in Nevada were considered in the socioeconomic analysis. However, DOE defined the region of influence based on the distribution of the residences of current employees of the Department and its contractors who work on the Yucca Mountain Project or at the Nevada Test Site. The region of influence, therefore, consists of the counties where about 90 percent of the DOE workforce live (Clark, Nye, and Lincoln Counties). The Department used the residential distribution, which reflects existing commuting patterns, to estimate the future distribution of workers. The Draft EIS presented information for counties within the designated region of influence and then the Rest of Nevada. The Rest of Nevada is an aggregate of the 14 remaining Nevada counties. The socioeconomic simulation model DOE used to estimate potential impacts indicated that the Rest of Nevada (including Elko County) would experience some economic effects from spending by workers for food and lodging.

8.11.6 (8144)
Comment - EIS001653 / 0087
Pg. 6-37 needs to discuss socioeconomic impacts related to land values, recreation use, and the cost to implement and manage emergency response training at the local level.

Response
DOE did not address potential changes in property values because of the dynamic nature of real estate and the uncontrollable factors that can influence property values. Assessing perceived impacts to property values or the impacts of "stigma" is generally problematic because it does not necessarily depend on the actual physical effects or risks of the proposed action, but on the negative perception of those effects or risks by the public. While DOE agrees stigmatization could result in adverse impacts under some scenarios, it is not inevitable or measurable and such stigmatization would likely be an aftereffect of unpredictable future events. As a consequence, DOE addressed but did not attempt to quantify potential impacts from risk perceptions or stigma in this Final EIS. Dollars spent on recreation activities in Nevada are inherent in the economic forecasts and are part of the estimated incremental change in economic parameters.

Costs associated with the implementation and management of emergency response training are not part of the socioeconomic impacts identified for Yucca Mountain activities. However, Sections M.6 and M.7 of the EIS describe the implementation of Section 180(c) of the NWPA. Under these requirements, DOE would provide technical assistance and funds to states for training public safety officials of appropriate units of local government and tribes through whose jurisdictions it would transport spent nuclear fuel and high-level radioactive waste. Training would cover procedures for safe routine transportation of these materials and for dealing with emergency response situations. DOE would institute this training before beginning shipments to the repository.

8.11.6 (8300)
Comment - EIS001873 / 0040
P. 3-72. The map of the socioeconomic region does not show Pioche, the county seat of Lincoln County. Alamo, Hiko, Panaca, and Rachel should also be shown since they are on potential haul routes.

Response
DOE has added Pioche to Figure 3-23 of the EIS. Figure 6-13 and related figures depicting transportation corridors in Lincoln County show Alamo, Hiko, Panaca, and Rachel. DOE has also added Pioche to those figures.

8.11.6 (8384)
Comment - EIS001873 / 0067
P. 6-97. DOE assumes socioeconomic impacts would occur mainly in Clark County. It seems likely that the construction could cause a short boom and bust cycle in a town like Caliente.

Response
DOE estimated that Lincoln County employment associated with repository construction and operations would be very small (see Section 4.1.6.2.1 of the EIS). The greater potential increase in Yucca Mountain-related jobs and population growth would be associated with transportation activities. The estimated peak total operational employment for Lincoln County would be about 167 if DOE selected the Caliente/Chalk Mountain heavy-haul truck route.

The construction-related workforce for Lincoln County would be very small comparatively. DOE assumed operations employees would live in Lincoln County and construction employees would live in Clark County and commute to the job site. Estimated total incremental population increases over a 25-year period would be about 166 people per year, on average, from the Caliente/Chalk Mountain route. The peak year for population increases associated with heavy-haul truck operations would be about 241 individuals, approximately 2.4 percent of the estimated County population.

DOE does not believe a boom-or-bust situation would occur because increases would be marginal and would be sustained over a long period and because of the County's proximity to a large metropolitan area. In general, if population growth associated with a proposed action was less than 5 percent of the study area's total population, potential impacts would be small.

8.11.6 (9986)
Comment - EIS001888 / 0492
[Clark County summary of comments it has received from the public.]

One commenter believed that the EIS, in reaching a decision for selection of transportation routes, should consider the potential socioeconomic impacts.

Response
The potential socioeconomic impacts associated with the transportation of spent nuclear fuel and high-level radioactive waste comprise one of the factors decisionmakers would weigh and balance in determining a preferred transportation mode and route.

Sections 6.3.2.2 and 6.3.3 of the EIS provide socioeconomic impact estimates for each rail corridor and heavy-haul truck route, respectively. The analysis for each alternative estimated the projected changes in a number of socioeconomic parameters including employment, population, State and local spending, disposable income, and Gross Regional Product. It compared the changes associated with Yucca Mountain activities to projected baseline growth trends and economic activity for each potentially affected county (Clark, Lincoln, and Nye) and the Rest of Nevada (the 14 remaining Nevada counties).

8.11.6 (10037)
Comment - EIS001888 / 0524
[Clark County summary of comments it has received from the public.]

Traffic volumes and shipments of hazardous wastes have increased dramatically since 1980. If trucks are used 44 accidents are likely from transport of HLW [high-level radioactive waste] to the repository. Even if minor, this could hurt economically.

Response
DOE analyzed a range of accident scenarios related to proposed transportation activities. It based these scenarios on probabilities with no definitive knowledge of when or where an accident could occur. As a consequence, attempting to assess the potential impacts of an accident on a local economy would be highly speculative.

8.11.6 (10038)
Comment - EIS001888 / 0525
[Clark County summary of comments it has received from the public.]

A serious accident with HLW [high-level radioactive waste] combined with limited alternate routes and limited ER [emergency response] capability could shut down commerce and damage economy.

Response
DOE analyzed a range of accident scenarios related to proposed transportation activities. Accident scenarios are based on probabilities with no definitive knowledge of when or where an accident could occur. As a consequence, to attempt to assess the potential impacts of an accident to a local economy would be highly speculative. The EIS does, however, address the socioeconomic impacts that could occur, directly or indirectly, as a result of the proposed siting, construction, operation and monitoring, and eventual closure of a geologic repository at Yucca Mountain, including transportation activities. The socioeconomic parameters considered in the EIS include quantitative estimates of changes to populations, employment, and income that could result from repository-related activities.

With regard to emergency response, DOE would enter into discussions with potentially affected units of local government and consider appropriate support and mitigation measures. As required by Section 180(c) of the NWPA, DOE would provide technical assistance funds to states for training for public safety officials of appropriate units of government and Native American tribes through whose jurisdictions it would transport spent-nuclear fuel and high-level radioactive waste. Training would cover procedures required for safe, routine transportation of these materials, as well as procedures for dealing with emergency response situations. A discussion of Section 180(c) can be found in Appendix M of the EIS. In addition, Section 116(c)(2)(A) of the NWPA sets forth assistance guidelines covering a number of issues including emergency preparedness and response and Section 117(c) sets forth

requirements for written assistance agreements. In the event of an incident or accident involving radioactive materials, states, tribes, and local governments can request assistance from the Federal Government under the Federal Radiological Emergency Response Plan. Assistance is available from 17 different agencies. In addition, DOE maintains eight Regional Coordinating Offices, which are ready at all times to provide assistance. Information concerning these resources can be found in Appendix M. Regional Servicing Contractors that DOE could use would be required to provide drivers and crews with specific written procedures that clearly define detailed actions to be taken in the event of an emergency or incident. The Draft Request for Proposals, *Acquisition of Waste Acceptance and Transportation Services for the Office of Civilian Radioactive Waste Management* (DIRS 153847-DOE 1998), focuses on these responsibilities, as well as on other related responsibilities. Carrier and shipper responsibilities regarding emergency situations are discussed in Appendix M.

8.11.6 (10194)
Comment - EIS001888 / 0565
[Clark County summary of comments it has received from the public.]

Commenters stated that the EIS should evaluate the economic impacts of transportation accidents.

Response
Accident scenarios are based upon probabilities with no definitive knowledge of when or where an accident could occur. As a consequence, any attempt to assess the potential impacts of an accident to a local economy would be highly speculative.

8.11.6 (10935)
Comment - EIS000463 / 0010
Nevada also believes that there would be significant adverse economic impacts (from a transportation accident), which, unfortunately, DOE chooses not to address in the draft DEIS.

Response
Risks to health and safety would be small because the risks of releases of radioactive materials in accidents would be small. Because the risks of releasing radioactive materials in transportation accidents would be small, the risk of detrimental economic consequences would also be small, although such risks would be different for each location and community along the routes used. The Federal Government would compensate for economic consequences of releases of radioactive materials in transportation accidents under provisions of the Price-Anderson Act (see Section M.8 of the EIS.) In response to public comments, Section J.1.4.2.5 contains a review of analyses of potential environmental and economic impacts from releases of radioactive materials.

8.11.6 (12069)
Comment - EIS000226 / 0023
Page 32 of the County/City EIS Scoping Report presented evidence that a transportation accident characterized by extensive media reporting might result in stigmatization of tourist destinations in Lincoln County (including five state parks). A loss of tourism during peak season could pose significant economic and fiscal consequences in Lincoln County. Mitigation of such a potential impact might include a contingent tourism marketing plan which is ready to implement the instant an accident occurs.

Response
Assessing the perceived impact of stigma is generally problematic because it does not necessarily depend on actual physical effects or risks of the proposed action, but on the negative perception of those effects or risks by the public. While DOE agrees stigmatization could result in adverse impacts under some scenarios, it is not inevitable or measurable and stigmatization would likely be an aftereffect of unpredictable future events, such as a serious accident. As a consequence, DOE addressed but did not attempt to quantify potential impacts from risk perceptions or stigma in the Final EIS. Section 2.5.4 and Appendix N of the EIS discuss this issue.

8.11.7 HUMAN HEALTH AND SAFETY

8.11.7 (801)
Comment - EIS000164 / 0004
Human error and systems errors happen. If one transports thousands of shipments over cumulative millions of miles, risks that are only one-in-a-million become virtually guaranteed. We must make our government keep waste transportation and power companies from making profits at our considerable peril. The classic textbook Public Health and Preventive Medicine states that "radiation protection has developed from using basic principles of protection against external irradiation in occupational settings: shielding, distance, time, and training." We must take those basic principles, especially that of shielding, distance, and time to heart.

Response
The commenter points out four principles—shielding, distance, time, and training—that are at the heart of radiation protection. DOE agrees with these principles and has incorporated them into the planning and design of all operations associated with the transportation of radioactive materials to the proposed repository.

The EIS addresses the radiological impacts of incident-free transportation and transportation accidents in Chapter 6 and Appendix J. The analyses take into consideration the distance and number of shipments to estimate the number of accidents that would be expected for each of the transportation alternatives. The spent nuclear fuel and high-level radioactive waste transportation casks are sufficiently robust that in more than 99.99 percent of accidents, no release of radioactive materials from the casks would be expected. Additional information on cask safety and testing is provided in Section M.4.

8.11.7 (927)
Comment - EIS000122 / 0002
What are the level of dosages allowed by the DOE on each of the radioactive elements that are known to cause cancer in the one hundred million people that these canisters will pass by in transport?

Response
The requirements listed in the U.S. Department of Transportation Hazardous Materials Packaging and Transportation Regulations (49 CFR Subchapter C – Hazardous Materials Regulations, Parts 171 through 180) specify a maximum allowable dose rate of 10 millirem per hour at 2 meters (6.6 feet) from the surface of the cask. This is total radiation from the cask and its contents, not the radiation for each individual radionuclide. The analysis in Chapter 6 of the EIS assumed the maximum allowable dose rate for all routine, incident-free transportation exposures. Estimated doses to individual members of the public would be far below those known to have reasonable probability of causing cancer. Considering national legal-weight truck transportation of spent nuclear fuel and high-level radioactive waste for 24 years, Section 6.2.3.1 of the EIS states that in a population of about 10 million people living along the roads, one would expect about 12.6 latent cancer fatalities. An individual resident would receive a dose of about 6 millirem. Background radiation for those 24 years would be about 7,200 millirem (about 300 millirem per year).

8.11.7 (2226)
Comment - EIS000622 / 0010
My questions earlier about exposure, accumulative exposure. If this panel cannot address them, then I think that's extremely important. If we have rules and regulations for transporting materials that specify they need to be moved in 48 hours, then why isn't this addressed in this book more adequately so that our questions can be answered?

We're talking about materials that are extremely deadly, and all of us are very concerned and want factual information. We want to know about cumulative effects. People who live along rail lines and have herds and growth materials, farms, who raise alfalfa and family foods, people who go out and harvest natural medicines and so forth need this kind of information.

Response
Section 8.4 of the EIS presents the past, present, and reasonably foreseeable future actions that would be additive to actions related to the transportation of spent nuclear fuel and high-level radioactive waste to a proposed repository. These actions include activities of the Nevada Test Site, Nellis Air Force Base, management of low-level radioactive

waste, Native American activities, other DOE waste management, and regional mining activities and enterprises, among others. For each action, the Department has presented the radiological impacts and vehicular accident impacts. There would be no cumulative effect of radiation on crops and farm animals grown in the vicinity of the transport routes since no radioactive material would be released from the cask during incident free transportation.

8.11.7 (3967)
Comment - EIS002239 / 0003
The EIS understates the potential health consequences of a very severe rail accident. We ran these same models, using different but credible inputs. They say 31 latent cancer fatalities, and we say the same accident could generate up to 1,380 latent cancer fatalities. A range of outputs results from a range of inputs; that's a bounding scenario that DOE uses, or they would like to in the document.

But in other areas they give you this sense of specificity; and they can tell you exactly what the impact would be. You have to define it broadly, and it could be significantly larger.

Response
The shipping casks used to transport spent nuclear fuel and high-level radioactive waste would be massive and tough with design features that comply with strict regulatory requirements that ensure the casks perform their safety functions even when damaged. Numerous tests and extensive analyses have demonstrated that casks would provide containment and shielding even under the most severe kinds of accidents. In addition, since the publication of the Draft EIS, the Nuclear Regulatory Commission published *Reexamination of Spent Fuel Shipment Risk Estimates* (DIRS 152476-Sprung et al. 2000). Based on the revised analyses, DOE has concluded in the EIS that casks would continue to contain spent nuclear fuel fully in more than 99.99 percent of all accidents (of the thousands of shipments over the last 30 years, none has resulted in an injury due to release of radioactive materials). This means that of the approximately 53,000 truck shipments, there would be an estimated 66 accidents, each having less than a 0.01-percent chance that radioactive materials would be released. The chance of a rail accident that would cause a release from a cask would be even less. The corresponding chance that such an accident would occur in any particular locale would be extremely low. Section J.1.4.2.1 of the EIS presents consequences for accidents that could release radioactive materials. The consequences of rail accidents ranged from 0.7 to 130 latent cancer fatalities; even the most severe accident, which had a probability of 8×10^{-19} per year, did not yield 1,380 latent cancer fatalities.

8.11.7 (4486)
Comment - EIS001409 / 0003
"5.6 cancer deaths" is unacceptable; even saying the number sounds nutty.

Response
The EIS addresses the radiological impacts of incident-free transportation and transportation accidents in Chapter 6 and Appendix J of the EIS. The analyses take into consideration the distance and number of shipments to estimate the number of accidents that would be expected for each of the transportation alternatives.

The spent nuclear fuel and high-level radioactive waste transportation casks are sufficiently robust that in more than 99.99 percent of accidents, no release of radioactive materials from the casks would be expected. Additional information on cask safety and testing is provided in Section M.4 of the EIS.

Safety is DOE's primary concern when shipping all types of radioactive material, including spent nuclear fuel and high-level radioactive waste. U.S. Department of Transportation and Nuclear Regulatory Commission regulations strictly regulate all aspects of radioactive material transportation, including packaging, transporting, and handling radioactive materials for all modes of transportation, and include standards for labeling, shipping papers, placarding, loading and unloading, allowable radiation levels, and limits for contamination of packages and vehicles, among other requirements. In addition, the regulations specify training for personnel who perform handling and transport of hazardous materials, liability insurance requirements for carriers, and safety requirements for vehicles and transport operations. More details on transportation regulations can be found in Section M.2 of the EIS.

The estimated number of latent cancer fatalities associated with incident-free transportation has been revised. As discussed in Section 6.1.1 of the EIS, the estimated number of latent cancer fatalities among the several million

people along the transportation routes would be 2.5 for mostly legal-weight truck transportation over 24 years and 1 for mostly rail. Also as discussed in Section 6.1.1, the estimated number of latent cancer fatalities for workers would be 5.6 for mostly legal-weight truck transportation over 24 years and 1.8 for mostly rail. At this time, it is not possible to know if a specific cancer would be caused by radiation; however, for perspective, there would be about 220,000 cancer fatalities in a population of 1 million along the transport routes from other causes besides the transport of spent nuclear fuel and high-level radioactive waste over the same period.

8.11.7 (6908)
Comment - EIS001539 / 0009
Acceptable Risks: Cancer risks of 1×10^{-3} are unacceptable to Denver residents and workers.

While DEH [Denver Department of Environmental Health] understands that the maximally exposed service station worker scenario is unlikely (service station worker exposed to 430 truck shipments per year for 24 years), DEH takes exception to a characterization of "very low" risk for the calculated probability of 1.2×10^{-3}, for a latent fatal cancer. Individual cancer risk estimates in the range of 1×10^{-3} are unacceptable for Denver residents and workers, and are recognized as unacceptable in environmental regulation.

Response
As indicated in Section J.1.3.2 of the EIS, the maximally exposed individual scenario cited by the commenter is meant to be a conservative estimate of potential exposures, not an expected exposure. A more realistic estimate of the radiation dose to people along transportation routes is about 0.2 millirem per year. This is equivalent to a latent cancer fatality risk of about 1×10^{-7}. For perspective, risks in the range of 1×10^{-4} to 1×10^{-6} are generally regarded as acceptable in environmental regulations.

8.11.7 (7620)
Comment - EIS001912 / 0079
Pg. 6-23. Needs to describe the numbers in Table 6-5 and discuss their implications.

Response
The implications of the results of the transportation analyses are discussed in Section 6.2.3.1 and Section S.4.2 in the EIS. Additional information on the basis for these calculations is provided in Appendix J.

8.11.7 (7950)
Comment - EIS001903 / 0013
Paragraph 1 on page J-45 states the baseline likelihood of fatal cancer is 23 percent. Paragraph 3 on page J-45 and paragraph 2 on page J-47 (citing the same reference) states the baseline likelihood of fatal cancer is 22 percent. This inconsistency should be corrected. Also, paragraph 3 on page J-45 incorrectly indicates that 8 percent plus 22 percent is 32 percent.

Response
Appendix J of the EIS has been revised to make these estimates consistent.

8.11.7 (8123)
Comment - EIS001653 / 0077
Pg. 6-23 Needs to describe the numbers in Table 6-5 [population doses and impacts from legal weight truck] and discuss their implications.

Response
The implications of the results of the transportation analyses are discussed in Section 6.2.3.1 and Section S.4.2 in the EIS Summary. Additional information on the basis for these calculations is provided in Appendix J.

8.11.7 (9625)
Comment - EIS001888 / 0295
A careful review of the DEIS leaves the reader unclear as to what the report is about and why the report recommends the Proposed Action. If the decision to ship waste to Yucca Mountain is made, that decision cannot be

supported on the basis of the human health risks presented in the DEIS. Based on the DEIS, the risk to human health when transporting the waste far exceeds the risk of leaving the waste in place.

This aspect of the report highlights the uncertain role risk assessment plays in the decision making process. In a 1995 report, a DOE contractor described a process for choosing a route through Nevada to Yucca Mountain. Nowhere in that report did the contractor mention human health risk as a criterion. Part of the uncertainty about the role of probabilistic risk assessment in the decision-making process is due to the inconsistent way in which PRA is performed. The differences between the DEIS produced by the DOE and the Generic EIS (GEIS) produced by the Nuclear Regulatory Commission for the relicensing of nuclear power plants are inconsistent. The differences in methodologies used to prepare transportation risk analysis are substantial and effect the results of the analysis.

Response
As discussed in the EIS Summary, the impacts from the Proposed Action would range from 22 to 50 fatalities. For the No-Action alternative, the impacts would range from 33 fatalities for Scenario 1 to 3,300 fatalities for Scenario 2. The impacts of the Proposed Action would be about the same as the impacts of Scenario 1 and less than the impacts of Scenario 2. Therefore, the risk to human health when transporting the waste would not far exceed the risk of leaving the waste in place.

Human health risk does play a role in transportation routing. For example, in the U.S. Department of Transportation guidelines for selecting preferred highway routes for spent nuclear fuel shipments, two of the primary criteria are normal radiation exposure and public health risks from accidents. These criteria are directly related to human health risks.

The Nuclear Regulatory Commission *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (DIRS 101899-NRC 1996) estimated about 3 fatalities for transport of spent nuclear fuel in Nevada. The EIS analysis estimated that as many as 1.5 fatalities could occur in Nevada, which is about half the number of fatalities for transport of spent nuclear fuel estimated by the Nuclear Regulatory Commission. The difference between the two analysis results is not substantial.

8.11.7 (9871)
Comment - EIS002150 / 0001
I heard in the evening news that the Department of Energy has the public safety for most in mind when considering trucking nuclear waste. However, I read in the Draft EIS that [the] Department of Energy estimates that 29 people will die from cancer as a result of using legal weight trucks. Eleven workers will die and 178 of the general public.

In signing 29 Americans to death through the horrors and pain of cancer does not indicate to me the Department of Energy really is concerned about public safety. Who decides which 29 will die as the Department of Energy estimated how many Americans will suffer the ravages of cancer and not die?

Response
Safety is DOE's primary concern when shipping all types of radioactive material, including spent nuclear fuel and high-level radioactive waste. U.S. Department of Transportation and Nuclear Regulatory Commission regulations strictly regulate all aspects of radioactive material transportation, including packaging, transporting, and handling radioactive materials for all modes of transportation, and include standards for labeling, shipping papers, placarding, loading and unloading, allowable radiation levels, and limits for contamination of packages and vehicles, among other requirements. In addition, the regulations specify training for personnel who perform handling and transport of hazardous materials, liability insurance requirements for carriers, and safety requirements for vehicles and transport operations. More details on transportation regulations can be found in Section M.2 of the EIS.

The estimated number of latent cancer fatalities associated with incident-free transportation has been revised. As discussed in Section 6.1.1 of the EIS, the estimated number of latent cancer fatalities among the several million people along the transportation routes would be 2.5 for mostly legal-weight truck transportation over 24 years and 1 for mostly rail. Also as discussed in Section 6.1.1, the estimated number of latent cancer fatalities for workers would be 5.6 for mostly legal-weight truck transportation over 24 years and 1.8 for mostly rail. At this time, it is not possible to know if a specific cancer is caused by radiation; however, for perspective, there would be about 220,000

cancer fatalities in a population of 1 million along the transport routes from other causes besides the transport of spent nuclear fuel and high-level radioactive waste over the same period.

8.11.7 (11679)
Comment - EIS002293 / 0001
The radiation allowed to reach the surface from the underground Yucca Mountain Nuclear Waste repository is less than a tenth of that which we receive from nature; and data now indicates that such extra low-level radiation, like that in Denver, may be healthy. But, what about the transportation of wastes to Yucca Mountain? Considering the real transportation dangers we face from such common carriers as gasoline trucks, and the 50,000 deaths each year from automobile accidents, why has there been such concern over nuclear waste transportation. Nuclear waste shipments are required to have such strong packaging and containment requirements that even in an accident the probability of significant radiation leakage is negligibly small. For the past 45 years, there have been some 3,000 shipments of nuclear fuel wastes without any effects on the public from nuclear radiation. The normal public radiation exposures from the transportation of wastes are orders of magnitude less than our radiation exposures from nature.

Response
The analyses in the EIS of transporting spent nuclear fuel and high-level radioactive waste indicate that the impacts would be negligible.

8.11.8 NOISE

8.11.8 (10)
Comment - 6 comments summarized
Commenters expressed concern about the proximity of public buildings and residences to proposed heavy-haul truck routes and rail lines in the State of Nevada. Some expressed concern about impacts to the quality of life due to noise during construction and operation of transportation facilities. Others expressed concern about impacts to structures from ground vibration associated with intermodal transfer stations and operation of heavy-haul trucks. Specific concern was expressed regarding the 640-meter (2,100-foot) region of influence established at the 45-decibel (dBA) level as it applies to Goldfield in Esmeralda County. Similar concerns were expressed regarding the assessment of noise associated with a railroad, an intermodal transfer station, and heavy-haul truck traffic in Caliente.

Response
Because of the need to differentiate among implementing alternatives (for example, among corridors), the noise analysis applied to the alternative rail corridors and heavy-haul truck routes was a reconnaissance-level screening analysis, rather than an examination of individual noise receptors or baseline levels of noise and traffic. As discussed in the introduction to Chapter 6 of the EIS, follow-on implementing decisions, such as the selection of a specific rail alignment within a rail corridor, would require additional field surveys, State. Local, and tribal government consultations, environmental and engineering analyses, and appropriate National Environmental Policy Act reviews. Buildings of historic significance, as well as public exposure to noise and vibration for example, would be addressed at that time.

Nevada does not have noise regulations. DOE used 45 dBA for the EIS analyses to establish conservatively a region of influence that would include most receptors. For comparison, residential noise standards in many other states generally use a level of 60 dBA for residential zones and 65 dBA for commercial zones. Residences located near highways along heavy-haul truck routes would be exposed to instantaneous levels of noise exceeding 60 dBA, which could elicit complaints that the noise was annoying. Annoyance levels are below levels that would be unsafe or could cause hearing damage. DOE has modified Section 3.1.9.2 of the EIS to include a discussion of noise levels that are potentially unsafe or that could cause hearing damage compared to levels that merely result in annoyance.

8.11.8 (7217)
Comment - EIS001337 / 0100
Page 3-134 Section 3.2.2.2.7. 3rd paragraph. The Caliente Route is located several miles from the community of Hiko. Reference to Hiko in this paragraph should be deleted.

Response
DOE has deleted the reference to Hiko.

8.11.9 AESTHETICS

8.11.9 (47)
Comment - 3 comments summarized
Commenters stated that the beauty and serenity of Crescent Valley, Nevada, would be destroyed if the valley were to become a rail or truck route for nuclear waste. A commenter indicated that the project would destroy everything in the valley within 25 years because of radioactivity in the air and water.

Response
The Carlin Corridor, part of which passes through Crescent Valley, is but one of five alternative rail corridors DOE considered in Section 6.3 of the EIS. Similarly, the Carlin heavy-haul truck route is only one of five alternative heavy-haul truck routes under consideration (see Section 6.3). See Sections 6.3.2.1 and 6.3.3.1 for discussions of the impacts from noise and to aesthetics in rail and heavy-haul truck corridors, respectively.

Crescent Valley has already been altered by man. There are houses, ranches, roads, and businesses in the valley, most of which are along State Route 306 between the Cortez area and Beowawe. There are historic and present-day mining operations in the vicinity of Cortez, and the effects of these operations are evident in the valley. Tailing piles, access roads, and mining facilities are evident. South of the Cortez area, there are fewer disturbances to the valley, consisting primarily of farming operations.

DOE recognizes that additional, site-specific information would be needed before it constructed either a branch rail line or upgraded roads to support heavy-haul truck shipping. DOE believes, however, that sufficient information on impacts to visual resources is provided in Chapter 6 of the EIS to help make a decision about the transportation mode (rail or truck) and the specific corridor or heavy-haul truck route (see Section 1.1 of the EIS). More detailed field surveys, government consultations, and appropriate National Environmental Policy Act reviews would be conducted if DOE made a decision to select either a specific rail alignment within a corridor or an intermodal transfer station and associated heavy-haul truck route. These additional reviews could include more detailed analyses of impacts to visual resources, as well as the identification of possible mitigation measures to minimize any impacts identified.

Sections 6.2.3 and 6.2.4 of the EIS summarize the radiological impacts of transporting spent nuclear fuel and high-level radioactive waste to Yucca Mountain. Appendix J describes these impacts in more detail. The radiation dose from routine transportation would not be likely to harm plant or animal life within the area. Sections 4.1.4 and 5.9 discuss radiation impacts to biological resources.

8.11.9 (5699)
Comment - EIS001887 / 0314
Page 6-14; Section 6.1.2.9 - Aesthetics

This transportation impacts overview section admits that the Caliente intermodal transfer station site "could cause impacts on the Class II lands of Kershaw-Ryan State Park" in terms of aesthetics. However, it goes on to imply that, because the character of the Meadow Valley Wash has already been modified by the existence of a rail line, the City of Caliente's water treatment facility and agricultural uses, the impact would be slight, if not negligible. No other potential impacts were even acknowledged in the overview. We find this cursory analysis inadequate.

Response
As discussed in Section 6.1.2.9 of the EIS, routes originating in Caliente could adversely affect the Class-II visual designation of lands in and around Kershaw-Ryan State Park, the entrance of which is on the east site of Meadow Valley Wash across from the potential location of an intermodal transfer station. Section 6.3.3.1 of the Draft EIS stated that more stringent management requirements would be necessary to retain the existing visual character of Class-II lands. Nevertheless, DOE has included additional discussion in Sections 6.3.2.2 and 6.3.3.2 of potential impacts to selected views from outside and inside each alternative rail corridor, and the visual impacts associated with the alternative sites for an intermodal transfer station.

8.11.9 (5700)
Comment - EIS001887 / 0315
Page 6-14; Section 6.1.2.9 - Aesthetics

No mention is made of the fact that the Apex/Dry Lake intermodal transfer station sites are in close proximity to the Valley of Fire State Park exit off I-15. Furthermore, no attempt is made to quantify any impacts that may occur as a result of this proximity.

Response
The entrance to Valley of Fire State Park is approximately 19 kilometers (12 miles) east of Interstate-15. The site of the Apex/Dry Lake intermodal transfer station would be another 18 kilometers (11 miles) south on Interstate-15 near its interchange with U.S. 93. Because of the distances between these locations, construction or operation of an intermodal transfer station at Apex/Dry Lake would not have any impacts on Valley of Fire State Park.

8.11.9 (7139)
Comment - EIS001337 / 0036
Lincoln County and the City of Caliente recommended that the DEIS, to facilitate an assessment of impacts upon viewshed, include an analysis of existing visual quality within basins potentially impacted by rail construction and operation. The County and City noted that such information can be used in developing measures for mitigation of impacts to viewshed within Lincoln County. The DEIS does assess existing visual quality along rail corridors in Lincoln County. There is however, no description of measures to mitigate visual impacts of rail corridors within Section 9.3 of the EIS.

Response
Section 9.3.8 of the EIS has been modified to include several possible measures to mitigate visual impacts from a branch rail line. Potential mitigation measures could include (1) removing or contouring spoil piles from construction activities to mimic the existing landscape; (2) minimizing the height of spoil piles if they could not be removed or recontoured; (3) planting native seedlings and other vegetation in specific locations to screen or reduce texture and color contrasts from key observation points; and (4) implementing a water spraying program during construction to minimize emissions of fugitive dust.

8.11.9 (7221)
Comment - EIS001337 / 0096
Page 3-116 Section 3.2.2.1.8. This section needs to describe BLM [Bureau of Land Management] designated wilderness study areas (WSA) proximate to transportation corridors. Section 4, environmental consequence needs to consider visual impacts to and from designated WSA's.

Response
Section 4.1.10 of the EIS describes potential aesthetic impacts of the proposed repository. There are no Wilderness Study Areas near Yucca Mountain. Therefore, construction and operation of a repository at Yucca Mountain would not affect existing Wilderness Study Areas.

The Caliente Corridor passes near Weepah Springs Wilderness Study Area in the Kawich and Reveille Mountains, and the Valley Modified Corridor passes near two Wilderness Study Areas near the Sheep Range Mountains, the Desert National Wildlife Refuge, and the Nellis Air Force Range. The Steiner Creek Alternate of the Carlin Corridor potentially encroaches on the Simpson Park Wilderness Study Area. DOE has modified Section 6.3.2.1 of EIS to include additional discussion of the visual impacts to these Wilderness Study Areas from construction and operation of a branch rail line.

8.11.9 (8141)
Comment - EIS001653 / 0085
Pg. 6-14 There is no discussion of aesthetic or visual impacts along the proposed rail corridors. Simply showing the VRM [Visual Resource Management] classifications for public lands is not acceptable. More importantly it is the views from surrounding mountains and inhabited areas of the proposed rail line, which are impacted. There are numerous high quality well used recreation areas along the proposed route. DOE needs to consider visual impacts from surrounding lands and prepare a full visual resource analysis.

Response
DOE described the potential aesthetic impacts of constructing and operating a branch rail line in Section 6.3.2.1 of the Draft EIS. Because these corridors cross mostly public land administered by the Bureau of Land Management, DOE used the Visual Resource Management classifications developed by the Bureau to assess each corridor's scenic sensitivity. DOE incorporated this approach into the EIS for consistency with the Bureau's approach and to facilitate comparison with previous assessments conducted by the Bureau.

DOE agrees that factors other than the Visual Resource Management classifications are pertinent to assessing visual impacts. Therefore, DOE has included additional discussion in Sections 6.3.2.2 and 6.3.3.2 of the Final EIS of potential impacts to selected views from outside and inside each alternative rail corridor, and the visual impacts associated with the alternative sites for an intermodal transfer station.

8.11.9 (8361)
Comment - EIS001873 / 0045
P. 3-135. The Kershaw Ryan State Park should be mentioned here as a resource. On the following page BLM [Bureau of Land Management] Visual Resource classes are displayed as if they included all the aesthetic resources of the area. Important areas not shown as resources, because they are not BLM lands apparently, should include the Pahranagat Lakes and Groom Mountain.

Response
Section 6.1.2.9 of the EIS notes that routes originating in Caliente could adversely affect the Class-II visual designation of lands in and around Kershaw-Ryan State Park, the entrance of which is on the east side of Meadow Valley Wash across from the potential location of an intermodal transfer station.

Pahranagat Lakes, located west of U.S. 93 along a section of road, is a natural area. However, since the lakes are along a highway that is being considered as a heavy-haul truck route (Caliente/Las Vegas Route) and a legal-weight truck route and not as a possible rail route, impacts to the area would not be likely.

Groom Mountain, located in the northeast portion of the Nellis Air Force Range, has already been removed from public use with the exception of several mining claims. The mountain previously was managed by the Nevada Test Site and used by the Air Force. Management of the mountain was transferred to the Air Force by the Test Site during the same time Pahute Mesa management was transferred from the Air Force to the Test Site.

DOE used the Visual Resource Management classifications developed by the Bureau of Land Management to assess each corridor's scenic sensitivity because the rail corridors cross mostly public land administered by the Bureau. The Bureau has prepared many environmental documents that use this visual-assessment classification. DOE incorporated this approach into the EIS for consistency with the Bureau's approach and to facilitate comparison with previous assessments conducted by the Bureau.

DOE agrees that factors other than the Visual Resource Management classifications are pertinent to assessing visual impacts. Therefore, DOE has included additional discussion in Sections 6.3.2.2 and 6.3.3.2 of the EIS of potential impacts to selected views from outside and inside each alternative rail corridor, and the visual impacts associated with the alternative sites for an intermodal transfer station.

8.11.9 (8387)
Comment - EIS001873 / 0068
P. 6-98. Even the BLM [Bureau of Land Management] Visual Resource map shows the Caliente intermodal site as being in a Class II area. Meeting Class III objectives is not satisfactory.

Response
As discussed in Section 6.1.2.9 of the EIS, routes originating in Caliente could adversely affect the Class-II visual designation of lands in and around Kershaw-Ryan State Park, the entrance of which is on the east side of Meadow Valley Wash across from the potential location of an intermodal transfer station. Section 6.3.3.1 of the EIS states that more stringent management requirements would be necessary to retain the existing visual character of Class-II lands.

8.11.9 (8388)
Comment - EIS001873 / 0069
P. 6-98. The impacts to aesthetics and cultural resources would be greater at Caliente than at the other sites.

Response
Only the Caliente intermodal transfer station and immediately adjacent routes would adversely affect the Class-II visual designation. Section 6.1.2.9 of the EIS states that routes originating in Caliente could adversely affect the Class-II visual designation of lands in and around Kershaw-Ryan State Park, the entrance of which is on the east side of Meadow Valley Wash across from the potential location of an intermodal transfer station. Section 6.3.3.1 describes the aesthetic impacts associated with this intermodal transfer station.

Section 6.3.3.1 of the EIS indicates that limited cultural resources surveys have been performed along the candidate heavy-haul truck routes. For this reason, specific impacts to culturally important sites, areas, or resources cannot be determined. If, however, DOE selected heavy-haul truck for the transportation of spent nuclear fuel and high-level radioactive waste, along with a site for an intermodal transfer station in Meadow Valley Wash, the Department would conduct additional field studies to identify cultural resource properties in or adjacent to the intermodal transfer station site (see Section 6.3.3.1).

8.11.9 (9807)
Comment - EIS001888 / 0394
[Clark County summary of comments it has received from the public.]

Commenters requested that the EIS include an analysis of existing visual quality within basins in Lincoln County and in the Elko region, and a description of the visual impact from rail construction and operation.

Response
DOE has included additional discussion in Sections 6.3.2.2 and 6.3.3.2 of the EIS of potential impacts to selected views from outside and inside each alternative rail corridor, and the visual impacts associated with the alternative sites for an intermodal transfer station.

8.11.9 (9868)
Comment - EIS002158 / 0013
Ryan Park is not sufficiently identified as a resource. It's within a half a mile of the proposed intermodal facility. This is one of our state parks in Lincoln County where people go for the scenery. Of course the facility's known, Rainbow Canyon and the name speaks for itself. It's a scenic area. The EIS simply says that it's a BLM [Bureau of Land Management] Class 3 area or something and leave it at that. Well, BLM visual impact categories are absolutely meaningless to the people that live in this area, where it's an aesthetic resource and a recreation resource that has deep significance for the community.

Response
Figure 3-29 of the EIS shows selected features along the alternative rail corridors, including Kershaw-Ryan State Park near Caliente. As discussed in Section 6.1.2.9 of the EIS, routes originating in Caliente could adversely affect the Class-II visual designation of lands in and around Kershaw-Ryan State Park, the entrance of which is on the east side of Meadow Valley Wash across from the potential location of an intermodal transfer station. Section 6.3.3.1 of the Draft EIS stated that more stringent management requirements would be necessary to retain the existing visual character of these Class-II lands.

DOE agrees that factors other than the Bureau of Land Management Visual Resource Management classifications are pertinent in assessing visual impacts. Therefore, DOE has included additional discussion in Sections 6.3.2.2 and 6.3.3.2 of the EIS of potential impacts to selected views from outside and inside each alternative rail corridor, and the visual impacts associated with the alternative sites for an intermodal transfer station.

8.11.9 (11937)
Comment - EIS001878 / 0069
The DEIS fails to adequately address the impacts of the proposed action on the scenic resources of Eureka County and Nevada's other rural counties. Nevada's rural areas provide increasingly rare unspoiled views of the basin and

range region, and include numerous scenic resources, none of which are identified in the DEIS. Scenic resources that could be affected by the proposed Carlin corridor include such areas as Monitor Valley and Grass Valley, and such features as stage stops, hot springs, graveyards, historic mines, historic ranches, historic railroads, the Humboldt River, and unique geological formations. The statement on p. 6-50, "The greatest impact on visual resources from the construction of a rail line would be the presence of workers, camps, vehicles, large earth-moving equipment, lay down yards, and dust generation" is self-serving and unsupported by any evidence. The statement completely ignores the long-term scenic impacts of new permanent linear facilities (i.e., rail lines and access roads) and the associated land disturbance.

The DEIS must analyze the anticipated impacts of the proposed action on views and scenery, particularly in areas now in a natural or nearly-natural condition. The DEIS must consider, at a minimum, the long-term scenic impacts of the railroad bed, access roads, excavations and pits, fences, and supporting infrastructure.

Response
DOE agrees with this comment and has included additional discussion in Sections 6.3.2.2 and 6.3.3.2 of the EIS of potential impacts to selected views from outside and inside each alternative rail corridor, and the visual impacts associated with the alternative sites for an intermodal transfer station.

8.11.10 WASTE MANAGEMENT

8.11.10 (112)
Comment - 2 comments summarized
Commenters stated that the Draft EIS provided insufficient information regarding the expected wastes that would be generated during the construction and operation of a rail line in Nevada (or intermodal transfer station and heavy-haul truck routes) and where such wastes would be disposed of. Commenters noted the remoteness of the proposed activities and the limited capacity of existing disposal facilities in those areas.

Response
Waste generated from the construction of a branch rail line or intermodal transfer station would fall into several categories: waste soil and rock material; general construction waste, such as wood, excess rebar, rail ties, and track material; solid waste generated by workers indirect to construction, such as trash; hazardous wastes, such as certain used paints, resins and lubricants; and sanitary waste. For all waste types, DOE likely would use the nearest available authorized disposal facilities having sufficient capacity. In some instances, DOE recognizes that wastes might need to be transported either by use of a partially completed branch rail line or by truck. DOE would identify disposal facilities during final design and construction of a branch rail line or intermodal transfer facility.

8.11.11 ENVIRONMENTAL JUSTICE/NATIVE AMERICAN ISSUES

8.11.11 (3084)
Comment - EIS000735 / 0012
The area of environmental justice addresses primarily Native-American issues. Other minority groups in urban areas may be effected just as much and should be considered.

Response
As discussed in Section 3.1.13 of the EIS, DOE defined minority as "Hispanic, Black, Asian/Pacific Islander, American Indian/Eskimo, Aleut, and other non-white person." To identify minority and low-income communities in the region of influence, DOE analyzed Bureau of the Census block groups. Those block groups where the percentage of minority or low-income residents was meaningfully greater than average were identified as minority or low-income communities for purposes of the environmental justice analysis. This EIS considers whether activities at Yucca Mountain could cause disproportionately high and adverse human health or environmental effects to those communities. The results of the analysis are throughout the EIS (for example, Section 6.2.5 for national transportation and Section 6.1.2.12 for Nevada transportation). The analysis determined that the potential impacts to public health and safety would be small on all populations during all phases of the repository program, and that no subsection of the population, including minority or low-income populations, would receive disproportionately high and adverse impacts.

8.11.11 (5147)
Comment - EIS001911 / 0006
We know that nuclear waste from Northern States Power will be transported through and adjacent to our reservation to a federal storage facility. Other jurisdictions may not be aware that they might be impacted by shipments. The DOE must begin conducting field workshops in these areas to begin educating people about these shipments and to answer the many questions people have regarding safety and emergency preparedness arrangements.

Response
Section 180(c) of the NWPA requires DOE to provide technical and financial assistance to states for training for public safety officials of appropriate units of local government and Native American tribes through whose jurisdictions the Department planned to transport spent nuclear fuel or high-level radioactive waste. The training of public safety officials would cover procedures required for safe routine transportation of these materials and for dealing with emergency response situations.

DOE plans to fully implement these requirements, but implementation would not begin until closer to the time that actual shipments would occur. Section M.6 of the EIS describes how Section 180(c) of the NWPA would be implemented. DOE anticipates knowing at least 4 years before shipments occurred the states or tribal jurisdictions through which the shipments would travel, even if exact routes had not been selected. Using this information, DOE would notify those jurisdictions about their potential eligibility for the Section 180(c) program. DOE published a Notice of Revised Proposed Policy and Procedures in the *Federal Register* (63 *FR* 23753 to 23766, April 30, 1998) that sets forth its plan for implementing a program of technical and financial assistance for training public safety officials of appropriate units of local government and tribes through whose jurisdictions the Department would transport spent nuclear fuel or high-level radioactive waste.

8.11.11 (5502)
Comment - EIS001660 / 0028
The DEIS inadequately analyzes the project impacts in relation to environmental justice. Rural communities are dispersed, rather than concentrated. Given the limited political power of rural communities, they are often targeted for unwanted projects. The Yucca Mountain repository is an excellent example of this type of "justice". The DOE's risk models are based on avoiding urban areas, and presume that risks from the project should be borne by individuals in rural communities. The DEIS should consider the effects of past programs and policies on communities, as well as additional impacts of the Yucca Mountain Project.

Response
An environmental justice analysis considers the potential for disproportionately high and adverse impacts to minority and low-income populations. Executive Order 12898, issued by the President, gives the environmental justice analysis this exclusive focus. An environmental justice analysis does not consider the potential for impacts on the general population. The EIS as a whole, however, does.

The EIS brings together the results of analyses from different technical disciplines that focus on consequences to certain resources that could affect human health or the environment. The EIS analyzes the demographic characteristics of the population in the immediate vicinity of the Yucca Mountain site and along transportation routes. Chapter 8 of the EIS addresses cumulative impacts, which consider the effects of past programs and policies on communities. The discussion focuses on past, present, and reasonably foreseeable future projects together with the potential impact from implementing the Yucca Mountain proposal. Section 8.1.2.2 discusses the other Federal actions in the vicinity of Yucca Mountain (including those conducted at the Nellis Air Force Range and the Nevada Test Site). Section 8.2 discusses cumulative impacts on human health and environmental resources. Section 8.2.5 discusses cumulative impacts to cultural resources. Section 8.2.6 discusses socioeconomic indicators associated with construction, operation, and closure of the repository.

8.11.11 (6382)
Comment - EIS001590 / 0006
There are questions about environmental justice. There's been no analysis along the specific routes regarding the impact on minority communities. Half of Rum Village is minority, not to mention Native American communities, black and Hispanic communities. Note that the waste would end up in land, which, by the treaty of Ruby Valley, is the property of Western Shoshone nation.

Response
Section 6.2.5 of the EIS discusses environmental justice aspects of national transportation of spent nuclear fuel and high-level radioactive waste. DOE does not believe it necessary to consider population characteristics on a community-by-community basis to determine potential public health and safety impacts from the transportation of spent nuclear fuel and high-level radioactive waste. The use of widely accepted analytical tools, latest reasonably available information, and cautious but reasonable assumptions if there are uncertainties, offer the most appropriate means to arrive at conservative estimates of transportation-related impacts.

Section 3.1.13 of the EIS describes the minority or low-income populations in Nevada in relation to Yucca Mountain and the alternative rail and heavy-haul truck corridors. Section 6.3.4 addresses environmental justice impacts in Nevada as a result of the shipment of spent nuclear fuel and high-level radioactive waste to the proposed repository. These sections contain maps that show the locations of minority or low-income populations in relation to the site and the transportation corridors.

This comment raises the question of whether disproportionately high and adverse health and safety impacts (as the term is used in Executive Order 12898) exist whenever minorities and low-income individuals reside along transportation routes for radioactive materials. The EIS considers air emissions and doses from exposure to radioactive materials during routine transport and shows that the impact from air emissions to be 1 emissions-related fatality. The EIS estimates that the 24-year national transportation campaign would cause fewer than about 3 latent cancer fatalities among the general public, and fewer under the preferred, mostly rail scenario. Although many people would be exposed nationwide over a long campaign, the radiation dose to any exposed individual would be very low. In this context, DOE does not consider such impacts to be high. DOE does not know of a plausible mechanism under these circumstances whereby low-income or minority populations could incur high and adverse impacts when the general public would not.

Section 3.1.1.4 of the EIS acknowledges the issue over the Ruby Valley Treaty of 1863. At this time, the Federal Government owns the land encompassing the Yucca Mountain site. A 1985 U.S. Supreme Court decision held that the Western Shoshone claim to land associated with the Ruby Valley Treaty has been extinguished. Although DOE recognizes the sensitivity of this issue, it believes that the Supreme Court case settles these issues [United States v. Dann, 470 U. S. 39 (1985)].

DOE believes that the EIS adequately analyzes the level of potential transportation-related disproportionate impacts to minority and low-income populations, including Native American tribes.

8.11.11 (8799)
Comment - EIS001907 / 0026
The DOE states in the DEIS that it believed there would be no disproportionately high and adverse impacts to minority or low-income populations as a result of the Proposed Action, including national transportation. This claim is obviously false, since already heavy-weight truck and rail routes throughout this country are placed in low-income, people of color communities. That this environmental racism would change with this proposed action, is as likely flying toads (although with continued accidents throughout the country, I'm sure that flying toads caused by radioactive mutation are getting closer and closer).

Response
Thank you for your comment.

8.11.11 (8853)
Comment - EIS002087 / 0003
On page J-110, under environmental justice, section J.3.6.4, it says, "In addition to the nearly random nature of accidents that would involve the transportation of materials and people, the probability of such an accident would be small in any location, minimizing the risk at a specific location. Furthermore, because the potential accidents would be nearly random, impacts to minorities in low income populations and to Native Americans along the routes in Nevada, it would be unlikely to be disproportionately high and adverse."

And with that particular statement, we would then disagree with that, because if there was an accident near a reservation, clearly being an Indian population there, we believe that would be higher and more disproportionate. I

would also – with that close proximity due to the subsistence patterns of Native Americans that that, again, would be a disproportionately high something to the Indian people, whatever the word is.

Response
The likelihood of a transportation accident that resulted in a considerable release of radioactivity affecting Native Americans along the shipping routes is extremely remote. The shipping casks used to transport spent nuclear fuel and high-level radioactive waste would be massive and robust, with design features that complied with strict regulatory requirements that ensure they were fault-tolerant. That is, the casks would perform their safety functions if damaged. Tests and analyses using the most advanced methods have demonstrated that the casks would provide containment and shielding even under the most severe accidents that could occur. A study by Sandia National Laboratories for the Nuclear Regulatory Commission concluded that the casks would continue to contain spent nuclear fuel completely in more than 99.99 percent of all accidents (DIRS 152476-Sprung et al. 2000). This means that there would be much less than a 1-percent chance of an accident that could result in a release of radioactive material from a cask over 24 years of spent nuclear fuel and high-level radioactive waste shipments to Yucca Mountain by truck. The chance of a rail accident that would cause release from a cask is even lower. The chance that an accident would occur in a specific locale would be much less than 1 percent.

8.11.11 (9342)
Comment - EIS001888 / 0058
In the DEIS minority and low-income populations are identified along possible transportation routes and in the vicinity of the proposed disposal site for the high-level nuclear wastes. This is accomplished by identifying census tracts and determining whether the proportion of these groups within those census tracts is higher than in other tracts. Because in the Yucca Mountain DEIS it is concluded that there is very little or no risk of adverse impacts from the government actions in question, it is also concluded that these groups will not be significantly affected.

There are several inadequacies in the methods that lead to these conclusions. These are listed below along with corresponding recommendations.

The DEIS treats minority and low-income populations as the vulnerable populations of interest (DEIS, pg. 3-94). These groups are specifically mentioned in all government documents considering environmental justice, because they have historically been politically vulnerable to government actions with adverse effects. But these are not the only groups that are disproportionately vulnerable to such actions. Guidance documents for interpreting Executive Order 12898 emphasize that fair treatment means that no group of people should bear a disproportionate share of negative environmental consequences of government actions. Other groups, for example, would be disproportionately vulnerable to such consequences because of impaired health or immature immunological systems.[(1)]

In view of this, we recommend that other vulnerable populations, including the aged, the infirm, pregnant women, and children, be included in the DEIS and other environmental justice analyses.

The DEIS sections on environmental justice use census and demographic information from 1990 (pp. 3-94, 3-96). The population of Clark County has changed dramatically in the ten years since the 1990 census. The Council on Environmental Quality (CEQ) Final Guidance Document notes the limitations of census data and proposes using multiple sources of information on potentially affected populations.[(2)] Clark County recommends that data on current populations and projections of population changes into the foreseeable future should be used to correct, supplement or replace 1990 Census data.

[(1)]Section 2. 1, *CEQ Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses*, April 1998.

[(2)]Section 5. 1, *CEQ Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses*, April 1998.

Response
DOE implements its responsibilities to environmental justice through the DOE Environmental Justice Strategy [of] Executive Order 12898, April 1995. This strategy lists four goals: (1) identify and address DOE programs, policies,

and activities that might have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations; (2) enhance the credibility and public trust of DOE by making public participation a fundamental component of all program operations, planning activities, and decisionmaking; (3) improve research and data collection methods related to human health and the environment of minority and low-income populations by incorporating full characterizations of risks, including the identification of differential patterns of subsistence consumption of natural resources among such populations; and (4) further Departmental leadership by integrating environmental justice criteria, as appropriate, with activities and processes related to human health and the environment. The DOE environmental justice methodology brings together results of analyses from technical disciplines that focus on consequences to certain resources that could affect human health or the environment to determine disproportionately high and adverse effects on minority and low-income populations.

The DOE implementation of environmental justice in identifying minority and low-income populations for closer analysis is consistent with Executive Order 12898. Health effects modeling includes all persons, including vulnerable populations identified by the comment.

The Final EIS uses Nevada population data that are consistent across technical areas and that directly reflect data developed by and received from county and State officials.

The Regional Economic Models, Inc. (REMI), Economic and Demographic Forecasting System (EDFS) 53-sector model incorporates population estimates from recent years (1998 to 1999) provided by Nye and Clark Counties for the socioeconomic baseline. For Lincoln County and the rest of Nevada, the REMI model used State Demographer estimates for the same period. DOE compared these locally derived estimates to the 2000 data provided by the Bureau of the Census.

The Final EIS baseline used REMI model projections of population totals for each county until 2035. The DOE Clark County projections correspond to those used by the University of Nevada, Las Vegas (DIRS 136698-Riddel and Schwer 1999), which also used the REMI model. Inputs to the Nye County projections for the Final EIS are based on data identified in Nye County documents (DIRS 150996-Williams 2000; DIRS 148140-PIC 1998). The Nye County projections are based in part on a REMI 14-sector model. Lincoln County and Rest of Nevada projections through 2018 from the Nevada State Demographer's Office (DIRS 107195-NSD 1999) were inputs to population projections for these areas. DOE used the county projections and Nye County source documents to project population distribution within the 80-kilometer (50-mile) radiological monitoring grid. California Department of Finance projections (DIRS 150294-California State Department of Finance 1998) for Inyo County were the basis for projecting population distributions for Inyo County sections of the radiological monitoring grid.

For analysis of accidents near transportation corridors and for health effects modeling in Nye, Clark, and Lincoln Counties, DOE used county population estimates as the basis for extrapolating estimated impacts. Thus, for example, if the estimated county population would double from 1990 to the year of analysis, the analysis generally assumed that the population in the block groups along transportation routes would also double. As appropriate, DOE based estimates of population changes in some areas (for example, the vicinity of the Las Vegas Beltway) on assumptions or information other than a simple percentage change.

For other Nevada counties, DOE used Nevada State Demographer projections (DIRS 107195-NSD 1999) as the basis for population projections in analyses of accidents near transportation corridors and for health effects modeling. The Department obtained estimates of historic populations of towns and cities in Nevada from the State Demographer's Office or from county documents.

Finally, as discussed in Section 5.2.4.1 of the EIS, DOE accepts the position of the National Academy of Sciences that it is not possible to predict future human behavior accurately. As stated in that section, the Draft EIS used a default position of today's conditions. For the Final EIS, DOE projected baseline population and other economic measures to 2035. Projections for periods further in the future would be substantially less credible.

However, while totals of populations would be forecast for block group levels, the 1990 Census remains the best readily available, consistent identification of the percentage of minority and low-income populations for small geographic areas such as block groups.

8.11.11 (9475)
Comment - EIS001888 / 0144
DEIS Statement (pg. 6-8) 6.1 - Nationwide, during the 24 years of the Proposed Action transportation activities, about four fatalities could result from traffic accidents under the mostly legal-weight truck scenario. For the same time period, about four fatalities could also result from traffic accidents under the mostly rail scenario. These fatalities would all be related to physical injuries associated with traffic accidents, not radiological impacts.

Clark County Comment - Under the transportation accident scenario for either rail or truck, four fatalities are forecast over 24 years. Without route identification, it is impossible to ascertain whether low-income or minority communities may be unduly burdened at the local scale. NEPA [National Environmental Policy Act] Regulation: Sec. 1502.22.

Response
Chapters 2, 3, and 6 and Appendix J of the EIS identify potential national and Nevada transportation routes for rail and heavy-haul-truck shipments. Further, Section 3.1.13 describes the minority and low-income populations in Nevada in relation to Yucca Mountain and the alternative rail and heavy-haul truck corridors. At this time, many years before shipments could begin, it is impossible to predict accurately which highway routes or rail lines DOE could use. Before such shipments began, states or tribes could designate alternate preferred highway shipping routes, and highways and rail lines could be built or modified. Therefore, for the analysis in this EIS, DOE selected potential highway routes in accordance with U. S. Department of Transportation regulations, which require the use of preferred routes (typically highways and bypasses that are part of the Interstate Highway System). The Department based its selection of potential rail routes on current rail practices, because there are no comparable Federal regulations applicable to the selection of rail lines for the shipment of radioactive materials. In response to public comments, DOE included maps of highway routes and rail lines it used for analysis in the EIS. It also included potential health and safety impacts associated with shipments for each state through which shipments could pass.

In the EIS, DOE used the census block data to identify minority populations that the selection of a particular rail corridor or route for heavy-haul trucks could affect. Census block data are not available to identify low-income populations. DOE has updated and refined information germane to its environmental justice analysis. The EIS now includes, for example, additional and more detailed mapping of minority populations, and additional mapping and information that describes the proximity of tribal lands and cultural and ceremonial areas to candidate rail corridors in Nevada. DOE conducted a statistical analysis for Nevada and the Nation to determine potential accident fatalities using accident statistics for states and applying these to large numbers of shipments across multiple routes and over long distances. Thus, the analysis cannot specify the location of a specific accident or the identification of the specific people involved.

In response to comments received on the Draft EIS, DOE considered locations at which individuals could reside nearer to the candidate rail corridors and heavy-haul truck routes in Nevada as a way of representing conditions that could exist anywhere in potentially affected communities. For example, DOE assumed that a maximally exposed individual could reside or work as close as 4.9 meters (16 feet) to a candidate heavy-haul truck route. During the 24-year period of repository operations, a maximally exposed individual would receive an estimated dose about 29 millirem, resulting in an increased fatal cancer probability of 2 in 100,000.

These exposures would be well below those received from natural background radiation, would not be discernible, even if corresponding doses could be measured, and would not add measurably to other impacts that an individual could incur. For comparison, the lifetime likelihood of an individual incurring a fatal cancer from all other causes is about 1 in 4.

If DOE made a decision on a specific mode and route of transportation through Nevada to the repository site, it would perform additional engineering and environmental studies to support detailed designs and appropriate National Environmental Policy Act reviews that included potential impacts to minority and low-income populations. Along with these studies, the Department would initiate consultations with responsible Federal, State, tribal, and local agencies to gather information and address potential mitigation of impacts.

DOE believes that the EIS adequately analyzes the potential environmental impacts of transportation accidents and the potential for disproportionate impacts to minority and low-income populations.

8.11.11 (9652)
Comment - EIS001888 / 0315
The environmental justice section of the DEIS clearly demonstrates the failings in the DOE's approach to impact assessment. The DEIS indicates that because there are no impacts on the population at large, therefore, there can be no impact on minority populations. This violates the DOE's own directives for implementing environmental Justice programs and is at variance with the best practice in the field. The DOE failed to make a serious effort in this area. In order for the DOE to have credibly analyzed environmental justice along pertinent transportation routes, the DOE must produce a new DEIS that contains documentary evidence of the DOE's outreach efforts and their effectiveness in engaging minority communities along the transportation corridors. It is vital that these communities be part of a meaningful dialogue about the risks of the program.

Response
DOE recognizes its obligation to identify potential impacts to minority or low-income populations. Section 1.5.1 of the EIS describes the outreach activities that DOE has undertaken to involve all members of affected communities. Section 3.1.13 describes the minority and low-income populations in Nevada in relation to Yucca Mountain and the candidate rail and heavy-haul truck corridors. Section 6.3.4 addresses environmental justice impacts in Nevada as a result of the shipment of spent nuclear fuel and high-level radioactive waste to the proposed repository. These sections contain maps that show the locations of minority or low-income populations in relation to the site and the transportation corridors. DOE generated these maps using census block group data. Only block group data are available for low-income populations, although a more detailed data set (blocks) is available for minority populations. In response to comments, DOE has updated its population estimates in the regions of influence to reflect the most recent State and local information, as well as the U.S. Census Bureau 2000 population summary data for Nevada. For the repository- and transportation-related regions of influence, DOE performed REMI simulations to establish an updated population baseline by accounting for population estimates and projections provided by county governments.

In the EIS, DOE used the census block data to identify minority populations that the selection of a particular rail corridor or route for heavy-haul trucks could affect. As noted above, block data are not available to help identify low-income populations. Based on these data, the EIS contains maps for each candidate corridor, route and intermodal transfer station location that identify more precisely the extent to which transportation activities could affect. However, for Nevada and the Nation, DOE conducted a statistical analysis to determine potential fatalities using accident statistics for states and applying these to large numbers of shipments across multiple routes and over long distances. Thus, the analysis cannot specify the location of a specific accident or the identification of the specific people involved.

If DOE made a decision on a specific mode and route of transportation through Nevada to the repository site, it would perform additional engineering and environmental studies to support detailed designs and appropriate National Environmental Policy Act reviews that included potential impacts to minority and low-income populations. Along with these studies, the Department would initiate consultations with responsible Federal, State, tribal, and local agencies to gather information and address potential mitigation of impacts.

DOE believes that its outreach activities and its efforts to identify potential impacts of the proposed repository, including transportation, are consistent with the objectives of Executive Order 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), relevant agency guidance, and National Environmental Policy Act best practices. DOE also believes that the EIS adequately analyzes the potential environmental impacts of transportation accidents and the potential for disproportionate impacts to minority and low-income populations.

8.11.11 (10236)
Comment - EIS001888 / 0585
The Department of Energy was one of the first federal agencies to develop an Environmental Justice policy. It is unfortunate, then, that the evaluation of effects on minority, low-income and Native-American groups is totally ignored in the DEIS. For example, U.S. 95, a major or proposed routing option bisects the Las Vegas Paiute

reservation. No statement is made of potential impacts. Other routes through the Las Vegas metropolitan area are adjacent to minority and low-income populations. However, there is no recognition of potential impacts to these populations in the DEIS.

Response
Section 6.3.4 of the EIS addresses environmental justice impacts in Nevada from shipping spent nuclear fuel and high-level radioactive waste to the proposed repository. These sections include maps that show the locations of minority or low-income populations with respect to the site and potential transportation routes. The EIS acknowledges that a 1.6-kilometer (1-mile) section of U.S. 95 would cross the southwest corner of the Las Vegas Paiute Indian Reservation that could be used by legal-weight trucks as well as either the Caliente-Las Vegas or Apex/Dry Lake heavy-haul truck route. In addition, the EIS notes a branch rail line in the Valley Modified Corridor would pass near the Las Vegas Paiute Reservation. As noted in Section 6.3.4, public health and safety impacts to all populations in Nevada would be small (less than 0 to 2 latent fatalities from cancer and other causes for incident-free transportation and 0.0005 latent cancer fatality for accidents over 24 years). The public health and safety impacts to minority and low-income populations along the routes of travel would also be small. Because the probability would be small at any single location, the risk of an accident at a specific location would also be small. Thus, impacts to minority or low-income populations or to Native Americans in small communities along the routes would also be small and, therefore, unlikely to be disproportionately high and adverse.

8.11.11 (10404)
Comment - EIS001927 / 0022
Using a groundless piece of circular logic, this DEIS holds that because the Proposed Action poses no impact anyway, it thus cannot impact low income communities or people of color. As shown above, this finding of no impact is flawed, as is this weak attempt to claim that principles of environmental justice are not being violated.

Who is most likely to live along the railroad tracks and the highway? In a place like Chicago, it would be people of color and the poor. Sometimes train cars sit on the tracks for up to 48 hours before moving on. If that car happens to hold an irradiated nuclear fuel cask, then the family sleeping in the house right next to the switch yard could receive a significant dose of gamma radiation. In certain sections of south Chicago, where thousands of high-level waste transport are targeted to go through, many residents are exclusively Spanish speaking. The same is probably true along transportation routes in Colorado, New Mexico, Arizona, and southern California. Has the DEIS been translated into Spanish? Why not? Why are these significantly impacted communities being excluded from the public comment process just because they don't speak English?

Response
The approach to environmental justice in the Draft EIS and Final EIS is consistent with Council on Environmental Quality guidance. The goal of this approach is to identify whether any high and adverse impacts would fall disproportionately on minority and low-income populations. The approach first analyzes the potential impacts on the general population as a basis for comparison. Second, based on available information, the approach assesses whether there are unique exposure pathways, sensitivities, or cultural practices that would result in high and adverse impacts on minority and low-income populations. If such potential impacts would be high and adverse, the approach then compares the impacts on minority and low-income populations to those on the general population to determine whether any high and adverse impacts fall disproportionately on minority and low-income populations. In other words, if high and adverse impacts on minority or low-income population would not appreciably exceed the same type of impacts on the general population, no disproportionately high and adverse impacts would be expected.

The Nuclear Regulatory Commission and U.S. Department of Transportation regulate the transportation of spent nuclear fuel. Although spent nuclear fuel emits gamma radiation and neutrons, these would be largely absorbed by the massive cask in which the fuel was transported. The regulations require that at 2 meters (6.6 feet) from the edge of the transport vehicle, the dose rate from the cask can be no higher than 10 millirem per hour. The EIS evaluated the dose to a "maximally exposed individual" resident who was assumed to live within 200 meters (660 feet) of a railroad switchyard at an exposure of 20 hours for each occurrence. The EIS also evaluated a resident living 30 meters (100 feet) from a point where all truck shipments would pass. The analysis of exposure for this maximally exposed individual conservatively assumed that the same resident would be exposed to all rail shipments to the repository over 24 years. Table 6-12 of the EIS indicates that a resident near a rail stop would receive a dose of 0.3 rem over 24 years of operation. The probability of a latent fatal cancer from this exposure would be 0.0001.

The maximally exposed individual would receive a dose of about 6 millirem from exposure to all truck shipments (6 millirem represents an increased probability of contracting a fatal cancer of 3 in 1 million).

During the public comment period for the Draft EIS, DOE encouraged stakeholders to offer comments on the document during the public hearings and by mail, facsimile, and the Internet. Before each hearing, DOE placed advertisements in local newspapers, including Spanish-language newspapers, and distributed public service announcements and press releases to more than 175 local and national stakeholders and media outlets to publicize information that would be accessible to the general public and to minority and low-income communities. In addition, in concert with the publication of the Draft EIS, DOE made available Spanish-language fact sheets about Yucca Mountain and the proposed repository.

8.11.11 (10635)
Comment - EIS001906 / 0016
The DEIS also fails to analyze nuclear waste transportation impacts for the proposed Timbisha Shoshone Trust Land Parcel at Scotty's Junction along U.S. 95 in Nevada. The DEIS does state that the Carlin and Caliente rail corridors implementing alternatives as well as the Caliente heavy-haul truck implementing alternative would pass through, overlap, or be located along the edge of the proposed Scotty's Junction Parcel (DEIS, p. 8-13). A high-level nuclear waste transportation route located on a proposed trust land parcel is an extremely negative impact for the Timbisha Shoshone Tribe. However, there is absolutely no mention of any impact to the Timbisha Shoshone by the above proposed routes in the DEIS. The DOE needs to fully analyze the impacts to the Timbisha Shoshone Tribe, including its Environmental Justice implications.

Response
DOE has updated and refined information germane to its environmental justice analysis and is aware of the potential conflict between the Carlin and Caliente Corridors, the Caliente heavy-haul truck route, and the Timbisha Shoshone Trust Lands. The Final EIS acknowledges that the Bonnie Claire variation of the Caliente and Carlin Corridors would pass through 4.5 kilometers (2.8 miles) covering 1.8 square kilometers (450 acres) of the Scottys Junction portion of the newly designated Timbisha Shoshone Trust Lands planned for residential and tourist uses.

8.11.11.1 Environmental Justice Issues

8.11.11.1 (2390)
Comment - EIS000713 / 0002
It is possible that the decision to haul the nation's nuclear waste across the country may affect more neighborhoods than any other decision by the Department of Energy indeed it will affect over 100 communities with populations of more than 100,000 people. Yet, the DOE refuses to name the mode of transportation (rail or truck) or the routes that it will use to transport 77,000 metric tons of nuclear waste across the country. Further, it has failed to hold hearings in key areas such as Chicago, Cleveland, Hartford, Indianapolis, Los Angeles, and other major cities that are likely to lie along those transportation routes, thereby ignoring the goals set forth in the Environmental Justice Strategy.

Response
The Final EIS identifies rail as the preferred mode of transportation. DOE assessed the health and safety impacts to people living near transportation routes along which spent nuclear fuel and high-level radioactive waste could be transported. This analysis examined the impacts using actual routes that DOE could select. DOE evaluated the impacts to an individual, the maximally exposed individual, who resided 200 meters (660 feet) from a point where all rail shipments, would pass. Under these circumstances, the maximally exposed individual would receive a dose of about 2 millirem from exposure to all rail shipments (6 millirem represents an increased probability of contracting a fatal cancer of 3 in 1 million). DOE estimated the average lifetime impact for an individual who lived along a route for 24 years of the Proposed Action. Although it can be argued that individuals could live closer to these shipments, it is highly unlikely that an individual would be exposed to all shipments over the 24-year period of shipments to the repository, even though DOE incorporated this highly conservative assumption into the analysis. These impacts are so low that they would not be discernible and would not add measurably to or compound other impacts that individuals or communities might incur.

DOE believes that its public involvement process during the development of the EIS is consistent with the Council on Environmental Quality and DOE regulations on implementing the National Environmental Policy Act, and DOE

guidance on public participation during the preparation of EISs. In 1995, DOE held 15 public scoping meetings across the country during a 120-day public scoping period (August 13, 1999, through February 28, 2000). After publishing the Draft EIS, DOE held public hearings at 21 locations in Nevada and across the country during a 199-day comment period to receive comments from interested parties. Given the impracticality of holding hearings at every location potentially affected by the transportation of spent nuclear fuel and high-level radioactive waste, DOE selected national hearing locations in the major metropolitan areas most likely to experience large numbers of shipments or locations close to nuclear powerplants.

8.11.11.1 (2612)
Comment - EIS000692 / 0001
I think most basically a definition of minority is numbers. In terms of numbers, votes, representation in the government process, Nevada residents should be viewed as a minority.

I don't think people in the East realize what it means to have ninety-eight percent of your county under public domain, or eighty-seven percent of your state publicly owned. Growth, both in population and economic growth, is curtailed.

In terms of low income populations, taken as an entity, Lincoln County is about as low income as it's possible to get.

It seems like taking advantage of the economically disadvantaged to have three of the five possible sites for intermodal transfer facilities located in Caliente, Nevada.

Response
DOE implements its responsibilities to environmental justice through its Environmental Justice Strategy [of] Executive Order 12898, April 1995. The first goal of this strategy is to identify and address DOE programs, policies, and activities that might have disproportionately high and adverse human health or environmental effects on minority and low-income populations. The procedure for implementing this goal and Executive Order 12898, *Environmental Justice*, is to identify minority and low-income communities by analyzing the Bureau of the Census population designation called "block groups." DOE pinpoints block groups where the percentages of minority or low-income residents are meaningfully greater than average. For environmental justice purposes, the pinpointed block groups are minority and low-income communities. DOE identifies low-income communities based on a determination of percentages of persons in poverty.

8.11.11.1 (4367)
Comment - EIS001157 / 0013
The DEIS is not clear as to what census blocks with high minority populations or high levels of poverty would be affected by the proposed routings. The DEIS refers to "City of Las Vegas" and "Las Vegas area" interchangeably. The area of concern needs to be clarified to make the environmental justice findings understandable.

Response
Figures 3-27 and 3-28 identify minority and low-income census block groups in Nevada, with potential transportation corridors (rail and heavy-haul truck) shown in relation to these block groups..

8.11.11.1 (6677)
Comment - EIS001878 / 0055
As discussed in the general comments, the DEIS inadequately analyzes the project impacts in relation to environmental justice. Because of the nature of rural life, communities are dispersed, rather than concentrated. Given the limited political power of rural communities, they are often targeted for unwanted projects. The Yucca Mountain repository is an excellent example of this type of "justice." The DOE's risk models are based on avoiding urban areas, and presume that risks from the project should be borne by rural people.

The DOE should consider the effects of past programs and policies on communities, as well as the additional impacts of the Yucca Mountain project. Rural low income populations received damaging doses of radiation in the 1950s and 1960s from above-ground and underground nuclear weapons tests conducted by the Atomic Energy

Commission. The DOE must take these disproportionately high adverse health and environmental impacts of its programs, policies, and activities into consideration.

Response
DOE does not believe it necessary to consider population characteristics on a community-by-community basis to determine potential public health and safety impacts from the transportation of spent nuclear fuel and high-level radioactive waste. The use of widely accepted analytical tools, latest reasonably available information, and cautious but reasonable assumptions if there are uncertainties, offers the most appropriate means to arrive at conservative estimates of transportation-related impacts. However, in response to comments, DOE has considered locations at which individuals could reside nearer to the candidate rail corridors and heavy-haul truck routes in Nevada as a way of representing conditions that could exist anywhere in potentially affected communities. For example, DOE assumed that a maximally exposed individual could reside as close as 4.9 meters (16 feet) to a candidate heavy-haul truck route. During the 24-year period of repository operations, the maximally exposed individual would receive an estimated dose of about 29 millirem, resulting in an increased fatal cancer probability of 2 in 100,000.

These exposures would be well below those received from natural background radiation, would not be discernible even if corresponding doses could be measured, and would not add measurably to other impacts that an individual could incur. For comparison, the lifetime likelihood of an individual incurring a fatal cancer from all other causes is about 1 in 4.

The analysis of cumulative impacts in Chapter 8 of the EIS did consider the impacts of past programs and policies in addition to those of the Yucca Mountain Project. The analysis evaluated impacts of repository activities coupled with those of other Federal, non-Federal, and private actions. The evaluation included past DOE activities at the Nevada Test Site (such as nuclear weapons testing) and past disposal of low-level radioactive waste at the Beatty Disposal Area.

8.11.11.1 (9136)
Comment - EIS001860 / 0005
Environmental justice/transportation considerations - The project proposes to transport waste by rail, road or both from 77 sites all over the U.S. to Yucca Mountain yet fails to provide any information about proposed routes outside the state of Nevada. Note that the bulk of the waste is proposed to be transported from reactors on the east coast to Yucca Mountain nearest the west coast of the country.

I live in the First District of San Bernardino County in southeastern California through which a portion or all of the waste produced at the five Southwestern commercial reactor sites might be transported to Yucca Mountain. The people in my community and neighboring communities rely upon State Route 247 as one of only three access roads to our Morongo Basin. Our community groups and cities are in constant communication with the state and the county transportation departments regarding the poor condition and inadequate maintenance on SR 247 and our major thoroughfare, SR 62. We have even considered formation of assessment districts to tax ourselves to improve our roads in this area for our use.

We are a moderate to low income area dependent upon Joshua Tree National Park tourism for our economic future. Most residents have to commute at least an hour a day to work in other places. Six dumps have been proposed for within 200 miles of Joshua Tree National Park. This is an environmental injustice which sacrifices our area to the profits of the waste industry and we have organized to oppose it, including changing our political representation and encouraging our elected representatives in their now-well-known efforts to stamp out corruption in our county and prevent our desert from being used as the nation's waste repository.

If the people who will be affected by the transportation of these wastes were to be allowed to vote on the issue, they would vote no as they have voted on other proposed projects in this area.

Implementing Yucca Mountain means transporting 800,000 cubic feet of high-level radioactive waste through our desert, 80 times more waste than would have been scheduled for the Low Level Radioactive Waste site proposed for Ward Valley near Needles. Why would we put up with this if we won't put up with Ward Valley?

It would be an environmental injustice to expect the citizens of San Bernardino County's First District to bear the brunt of DOE traffic on our already inadequate roads and we should be able to expect the DOE to advise us which of our roads are being considered for alternate waste transportation routes.

Response
DOE has not determined the specific routes it would use to ship spent nuclear fuel and high-level radioactive waste to the proposed repository. Nonetheless, the EIS analysis used current regulations governing highway shipments and historic rail industry practices to select existing highway and rail routes to estimate potential environmental impacts of national transportation. Routing for shipments of spent nuclear fuel and high-level radioactive waste to the proposed repository would comply with applicable regulations of the U.S. Department of Transportation and the Nuclear Regulatory Commission in effect at the time the shipments occurred.

These regulations, which were developed to promote public safety and reduce radiological risk for transport of Highway Route Controlled Quantities of Radioactive Materials, require shipments of radioactive material to be on state or tribal designated preferred routes to reduce the time in transit. The State of California would have the opportunity to designate alternative preferred routes in accordance with U.S. Department of Transportation regulations. Consultation with local jurisdictions and tribes would be necessary.

8.11.11.1 (9826)
Comment - EIS001888 / 0403
[Clark County summary of comments it has received from the public.]

County feels EIS must seriously consider federal directives regarding environmental justice. 24% of county is minority (11% Hispanic/ 9% Black) and 38% along UP rail line. Native Americans live in areas adjacent to I-15 and US 95.

Response
The analysis of environmental justice impacts in Nevada considered existing highways and railroads that DOE would use in Nevada - Interstate-15, the proposed Las Vegas Beltway; U.S. 95; five possible highway routes for heavy-haul trucks; the Union Pacific Railroad's mainlines in northern and southern Nevada; and five corridor alignments with variations for a possible branch rail line in five rail corridors in the State. Section 6.3.4 of the EIS discusses the environmental justice impacts from transportation options being considered in Nevada. The EIS acknowledges that the Union Pacific Railroad's mainline tracks pass through the center of the Moapa Reservation and through the center of Las Vegas, crossing census block groups with high fractions of minority and low-income populations.

8.11.11.1 (10012)
Comment - EIS001444 / 0005
Section 3.1.13, Page 3-94 - 3-96
Esmeralda County needs to be included in the discussion on Environmental Justice.

Response
Esmeralda County is included in the environmental justice discussions on the transportation options in Section 3.2.2.1.10 of the EIS, which addresses candidate rail corridors and in Section 3.2.2.2.10, which addresses candidate heavy-haul truck routes.

8.11.11.1 (10655)
Comment - EIS001888 / 0402
[Clark County summary of comments it has received from the public.]

Populations at risk include: residents; peak and average daily visitors; workplace employment population; institutional populations. Are some populations, for example, African Americans at greater risk than the general resident population?

Response
The DOE analysis showed that the Proposed Action would not result in significant environmental or health and safety impacts to any segment of the population. Using available information, DOE evaluated the likelihood that circumstances unique to minority and low-income populations could create a potential for these populations to be exposed to disproportionately high and adverse impacts. For example, DOE assessed the health and safety impacts to people living near actual transportation routes along which spent nuclear fuel and high-level radioactive waste could be transported. The analysis showed that even if an individual lived along the same route for 24 years, this would increase the likelihood of a latent fatal cancer for this individual by about 1 in 1 million for rail shipments to about 29 millirem (increased fatal cancer probability of 2 in 100,000). These exposures would be well below those received from natural background radiation, would not be discernible even if corresponding doses could be measured, and would not add measurably to other impacts that an individual could incur. For comparison, the lifetime likelihood for an individual fatal cancer from all other causes is about 1 in 4.

8.11.11.2 Native American Issues

8.11.11.2 (5377)
Comment - EIS001887 / 0093
Pages 2-41 and 2-42; Figures 2-26 and 2-27 - Highway and Rail System Maps

The maps do not show the locations of potentially affected Native American tribes in relation to the Interstate Highway and rail systems. Even in the absence of identified shipping routes (a major shortcoming of the Draft EIS that is discussed in detail elsewhere in these comments), the document should have provided some indication of Native American lands that are traversed by, or are located in proximity to, highway and rail routes. Numerous Native American lands/communities outside Nevada will be impacted by spent fuel and HLW [high-level radioactive waste] shipments including: Gila Bend, Navajo, San Xavier, and Salt River in Arizona; Umatilla and Cow Creek in Oregon; Miccosukee in Florida; Fort Hall in Idaho; Winnebago in Nebraska; Cattaraugus in New York; Quapau, Ottawa, Modoc, Sac Fox, in Oklahoma; and others. The failure to identify Native lands and communities along transportation routes and to assess impacts of the Proposed Action on those entities is another indication of the inadequate and superficial treatment of transportation impacts in the Draft EIS.

Response
In response to public comments, Figures 2-25 and 2-26 of the EIS have been revised to show Federally recognized tribal lands located along highway and rail routes that could be used for national transportation.

8.11.11.2 (5573)
Comment - EIS001887 / 0199
Page 3-113; Section 3.2.2.1.5 - Cultural Resources

Native American Interests: The Draft EIS states that, "...while transportation issues are of extreme importance to [Native Americans], at present they cannot provide specific comments on any of the Nevada transportation alternatives... due to the absence of systematic ethnographic studies for any of the proposed project areas." Since the Draft EIS acknowledges at least the potential for significant impacts to Native American cultural resources, it is incumbent upon DOE to carry out the needed ethnographic studies as part of its work in preparation of the Draft EIS. DOE has had almost 17 years to do this work, and failure to do it should not exempt DOE from its obligations under NEPA [National Environmental Policy Act]. In addition, a considerable body of information exists as a result of research carried out by the State of Nevada between 1986 and 1998. This research was available to DOE at the time it was preparing the Draft EIS. Summaries of the State's Native American studies reports are found in Appendix II of these comments.

Response
DOE had not conducted comprehensive and systematic ethnographic studies of lands along candidate transportation corridors at the time it published the Draft EIS. The Department reviewed Appendix II to the above-referenced comments with respect to ethnographic information. Since the publication of the Draft EIS, DOE has gathered ethnographic information along the transportation corridors and included it in Section 3.2.2.1.5 of the EIS. The cultural resources sections of Chapter 6 include analyses of this information. Ethnographic information gathering is

not yet complete. DOE would conduct additional surveys in the course of evaluating any final corridor selection and before route construction began to identify cultural resources and to design avoidance or other mitigation measures to minimize the potential for harm to such resources.

Section 9.3.5 of the EIS acknowledges that land clearing, excavation, and construction activities have the potential to disturb or cause the relocation of cultural artifacts, and identifies actions that DOE would take to mitigate adverse impacts to cultural resources along transportation routes. These actions include those required by law or regulation and those built into the project to reduce such impacts.

8.11.11.2 (5606)
Comment - EIS001887 / 0232
Page 4-38; Section 4.1.5.2 - Impacts to Cultural Resources from Construction, Operation and Monitoring, and Closure

Native American Viewpoints: The 1986 Environmental Assessment (EA) for Yucca Mountain stipulated that, "[i]f the Yucca Mountain site is approved for site characterization, [Native American impacts] will receive appropriately detailed treatment in research to be performed during the Environmental Impact Statement process."[(26)] The EA also made special note of the "potential for impacts on Native American cultures from [SNF (spent nuclear fuel) and HLW (high-level radioactive waste)] transportation activities" and stated that "[t]his aspect will receive appropriately detailed treatment ... if Yucca Mountain is approved for site characterization."[(27)] The Draft EIS, however, fails to specifically address potential impacts to Native American communities in Nevada (and in states through which SNF and HLW will be shipped to a Yucca Mountain repository). Such impacts include effects on Native culture, economics, infrastructures, emergency response/preparedness requirements, state-tribe relationship effects that may be caused by state routing or risk management decisions, implications for tribal sovereignty, Native land claim issues and impacts, and other areas potentially impacting Native peoples and communities. The Draft EIS should have contained a detailed description of the activities undertaken, the data collected, and the analyses done to adequately evaluate potential effects of the Yucca Mountain program on Native peoples and communities across the country. The Draft EIS should also have included an analysis of the impacts of the transportation of spent fuel and high-level waste.

[(26)] U.S. Department of Energy. Environmental Assessment Yucca Mountain Site, Nevada Research and Development Area, Nevada, May, 1986, pp. C.4-30.

[(27)] Ibid, pp. C.7-42.

Response
DOE determined that it is not necessary to examine the composition of the general population residing along existing spent nuclear fuel and high-level radioactive waste transportation corridors before DOE can reasonably conclude that there would be no disproportionately high and adverse impacts to minority and low-income populations from the transportation of radioactive materials. In addition, as described in Chapter 6 of the EIS, incident-free transportation and the risks from transportation accidents (the maximum reasonably foreseeable accident scenario would have 2.3 chances in 10 million of occurring per year) would not present a large health and safety risk to the population as a whole, or to workers or individuals along national transportation routes. The low effect on the population as a whole would be likely for any segment of the population, including minorities, low-income groups, and members of Native American tribes.

However, the Final EIS examines the composition of the population along newly proposed transportation rail corridors in Nevada. Selecting among alternative new routes could offer opportunities to avoid high and adverse impacts that would fall disproportionately on low-income or minority populations in relation to the general population that would not be present when considering existing transportation corridors. Therefore, even though the health effects from exposure to radioactive materials from transportation activities would not implicate environmental justice concerns in selecting new routes, other factors such as the impacts of the construction and use of a newly created route on land use, socioeconomics, noise, air quality, and esthetics could vary by location. Section 6.3.4 of the EIS presents the analysis of environmental justice impacts in Nevada.

8.11.11.2 (5717)
Comment - EIS001887 / 0328
Page 6-34; Section 6.2.5 - Environmental Justice

The Draft EIS refers only to Native Americans affected by national transportation in Idaho. Proper identification of the national highway and rail routes used in the Section 6 analysis would have revealed additional impacts on Native American populations in other states. Analyses prepared for the State of Nevada by Planning Information Corporation identified the following potentially affected Indian Reservations:

Arizona: Hualapai and Navajo (I-10, I-40; BNSF/UPRR);

California: Agua Calientes, Cabazon, Chemehuevi Valley, Ft. Mojave, Ft. Yuma, Morongo, Torres Martinez, and Hoopa Valley (I-10, I-40/I-15; BNSF/UPRR);

Florida: Hollywood (I-95, FECR);

Iowa: Mesquakie (Sac & Fox) (UPRR);

Kansas: Potawotamie (UPRR);

Minnesota Prairie Island (CP/Soo);

Nebraska: Omaha and Winnebago (UPRR);

New Mexico: Acoma, Canoncito, Isleta, Laguna, Navajo, and Zuni (I-10, I-40; BNSF/UPRR);

New York: Cataraugas and Tonawanda (I-90, Conrail)

North Carolina: Cherokee (I-40)

Oklahoma: Choctaw, E. Shawnee, Kialegee Creek, Kickapoo, Miami, Modoc, Osage, Ottawa, Peoria, Quapaw, Sac & Fox, and Thlopthlocco Creek (I-35, I-40; BNSF/UPRR);

Oregon: Umatilla (I-84; UPRR);

Utah: Goshute, Ouray, Skull Valley, and Unitah (I-84/I-15/I-80/US93A; UPRR)

Washington: Yakima (I-84; UPRR)

Wisconsin: Oneida (WCRR)

The Draft EIS does not attempt to define transportation-affected and potentially-affected Indian lands and resources. Nevada defines affected lands and resources to include the following: (1) reservations crossed by potential shipping routes; (2) off-reservation ceded lands, where Tribes retain treaty rights or other legally recognized user rights crossed by potential shipping routes; (3) reservation lands and off-reservation lands within transportation emergency evacuation zones along potential shipping routes; (4) reservation and off-reservation lands which could be contaminated by air or water transport of radioactive materials released in a severe transportation accident or terrorist incident (generally within 50 miles down-wind, down-stream, or down-gradient of a potential shipping route); (5) reservations whose highway access would be disrupted by a nuclear waste transportation emergency; and (6) off-reservation lands along potential shipping routes where Tribal personnel would likely be involved in transportation emergency response.

The Draft EIS gives insufficient consideration to the major concerns identified by potentially affected Indian Tribes and by the National Congress of American Indians. These concerns include: (1) Tribal authority to regulate shipments across reservations; (2) emergency response planning and training for Tribal personnel; (3) advance notification of shipments and shipment monitoring; (4) protection of Native American religious and cultural sites,

plants, and animals, both on and off reservations; (5) cultural implications of potential radiological contamination of Indian lands and the cultural implications of cleanup activities involving non-tribal personnel; and (6) adverse economic impacts of public perception of risk, especially adverse impacts on tribal tourism and recreation businesses. Moreover, except for tribes in Idaho, DOE failed to identify potential Indian reservations and communities in the Draft EIS and in the public hearing notices, and failed to provide financial assistance to facilitate independent technical review of the Draft EIS by potentially affected Indian Tribes.

Response

In response to public comments, DOE has revised the EIS to show the locations of Federally recognized tribal lands along highway and rail routes the Department could use for transportation. DOE recognizes that tribal governments have a unique legal and political relationship with the Government of the United States. For this reason, DOE will continue to interact with tribal governments and work with representatives of the Consolidated Group of Tribes and Organizations to ensure that it considers tribal rights and concerns before making decisions or implementing programs that could affect tribes.

With regard to emergency response planning and training, DOE would provide technical and financial assistance to states to assess the need for and training of public safety officials of units of local government and tribes through whose jurisdictions it would transport spent nuclear fuel and high-level radioactive waste, as required by Section 180(c) of the NWPA. Section M.6 of the EIS discusses these requirements in detail. In addition, the Federal Radiological Program includes plans that outline the policies, procedures, roles, and responsibilities of Federal, tribal, state, and local agencies in planning for and responding to emergencies involving releases or suspected releases of radiological materials from Government facilities or operations. Training would cover procedures for safe routine transportation of these materials, as well as procedures for dealing with emergency response situations. In the event of an incident involving spent nuclear fuel or high-level radioactive waste, the transportation vehicle crew would notify local authorities and the central communications station monitoring the shipment. DOE would make resources available to local authorities, if requested, to mitigate such an incident.

DOE would comply with applicable Federal regulations for notification of spent nuclear fuel shipments and would follow the same procedures for shipments of high-level radioactive waste and for unclassified shipments of DOE-owned material. Nuclear Regulatory Commission regulations require notification of the governor of the affected state or the governor's designee of pending shipments. In addition, DOE would notify potentially affected tribes of pending shipments. The governor would notify state and local safety officials, as appropriate.

With respect to the Proposed Action, DOE has implemented worker education programs on the protection of cultural resources to limit direct impacts to such resources, especially inadvertent damage and illicit artifact collecting. If significant data recovery (artifact collection) was required during construction and operation, DOE would initiate additional involvement of Native American tribes to determine appropriate costs. If DOE made a decision about the transportation of spent nuclear fuel and high-level radioactive waste in Nevada, it would conduct additional engineering and environmental studies for the selected mode and route to provide the basis for detailed design. In addition, DOE would initiate consultations and interactions with responsible Federal, state, tribal, and local agencies to gather additional location- and community-specific information, assess potential impacts, consider mitigation measures, and conduct appropriate National Environmental Policy Act reviews.

A system of financial protection established by the Price-Anderson Act covers the costs of state and tribal actions associated with a nuclear accident, such as a transportation accident in which there was a suspected release of radioactive material. In response to public comments, Appendix M of the EIS discusses Federal radiological emergency response programs.

The EIS addresses potential risks to human health and the environment from the proposed siting, construction, operation and monitoring, and closure of a repository at Yucca Mountain. The socioeconomic impacts discussed in the EIS include quantitative effects on populations, employment, and income that would result from a decision on whether to proceed with development of the repository. However, the manner in which particular individuals might perceive risks and modify their behavior is speculative and subject to debate.

8.11.11.2 (6621)
Comment - EIS001632 / 0068
The draft EIS (Figures 2-26 and 2-27) depicts U.S. interstate and rail routes which are potential corridors for waste proposed for disposal at Yucca Mountain. We recommend that the final EIS provide a modified overlay of these two figures to depict Tribal lands through which waste bound for disposal at Yucca Mountain may pass via road or rail. The Bureau of Indian Affairs (BIA) has a 1993 map for Indian Land Areas in the lower 48 states. This map depicts the location of tribal lands in relationship to the Federal highway network, and may be useful for this effort.

Response
In response to public comments, DOE has revised Figures 2-25 and 2-26 of the EIS to show Federally recognized tribal lands located along highway and rail routes that could be used for national transportation.

8.11.11.2 (10764)
Comment - EIS002144 / 0001
I'm a member of the tribe the Paiutes, been here since forever. Our people, we're not going anywhere. We can't, because this is our land. This is where we come from. That's a real short, quick history. We are located fifty-five miles from here with the rail line and the interstate running across our lands.

Response
DOE has been interacting with representatives of the Moapa Paiute Tribe as part of the Native American Interaction Program since the late 1980s. The Department appreciates the tribe's involvement to help better understand Native American issues associated with the repository program.

8.11.11.2 (10768)
Comment - EIS002144 / 0005
There have been no studies of our lands and our people and we are the ones that are to lose the most. The studies that they have, transportation studies that they have is for big places like Las Vegas. Well, to some of you guys in Las Vegas, that's not even a drop in the bucket, but if somebody dies on a reservation where we only have approximately 290 enrolled members, that's a big drop. If a truck was going down the road and our tribal council a lot of time travel together in a van, if they were to knock that van off the road and kill everyone, that's six people. That's a whole government that is gone and can't be revived. There is no way you could pay us any amount of money to get those people back because they are no longer here. They no longer exist. The only way they exist is to us, our -- the people of Moapa because they come back and they tell us how we should be doing things, how -- what we should say.

Response
The transportation analyses in the EIS evaluated impacts to all people along the transportation routes, including Native Americans. DOE does not believe it necessary to consider population characteristics on a community-by-community basis to determine potential public health and safety impacts from the transportation of spent nuclear fuel and high-level radioactive waste. The use of widely accepted analytical tools, latest reasonably available information, and cautious but reasonable assumptions if there are uncertainties, offer the most appropriate means to arrive at conservative estimates of transportation-related impacts.

For example, DOE assumed that an individual, the "maximally exposed individual," would be a resident living 30 meters (100 feet) from a point where all truck shipments, or 200 meters (660 feet) from a point where all rail shipments, would pass. Under these circumstances, the maximally exposed individual would receive a dose of about 6 millirem from exposure to all truck shipments, and a dose of about 2 millirem from exposure to all rail shipments (6 millirem represents an increased probability of contracting a fatal cancer of 3 in 1 million).

Although it can be argued that individuals could live closer to these shipments, it is highly unlikely that an individual would be exposed to all shipments over the 24-year period of shipments to the repository, even though DOE incorporated this highly conservative assumption into the analysis.

8.11.11.2 (11352)
Comment - EIS002271 / 0002
For example, the DOE's lack of proactive procedures put communities at a high level of risk by failing to establish MOU's [Memorandums of Understanding] in a timely manner with Affected Units of Tribal Governments along the nuclear waste transportation routes for the New Mexico, WIPP [Waste Isolation Pilot Project] site.

The DOE's refusal to act in such a proactive manner demonstrated the department's willingness to allow a back-up of nuclear waste on major highways and rail thoroughfares putting citizens at an unnecessary level of risk along those routes. This would not have occurred had MOU's been established with the Affected Units of Tribal Government.

In this scenario, affected tribes may shut down a rail transportation route and file lawsuits against the DOE, severely limiting safe transportation of nuclear waste. When the MOU's were finally established, the language within the MOU's recognized and addressed the concerns and rights of the affected tribes. Similar tribal actions and lawsuits could impede the effective and safe transportation of nuclear wastes.

Response
The Final EIS identifies rail as the preferred mode of transportation. If the Yucca Mountain site received approval, DOE would implement the requirements of Section 180(c) of the NWPA, which requires it to provide technical and financial assistance to states to train public safety officials of appropriate units of local government and tribes through whose jurisdictions it would transport spent nuclear fuel or high-level radioactive waste. Training would cover procedures for safe transportation and for dealing with emergency response situations.

DOE has not yet acted to implement Section 180(c) of the NWPA because such action could only occur after the Yucca Mountain site was been determined to be suitable as a nuclear waste repository. As stated in Appendix M of the EIS, about 4 years prior to the beginning of shipments, DOE would notify affected states and tribes of preliminary routes that shipments could use. Because shipments are not expected to occur prior to 2010, DOE anticipates that the notifications would occur after 2005. At that time, affected states and tribes that had been notified could present proposals to DOE for grants to determine their respective needs for training of safety officials.

Backups on rail lines due to additional rail transport would be unlikely. Spent nuclear fuel and high-level radioactive waste transportation would represent a very small fraction of the total railroad traffic (0.007 percent of railcar kilometers).

8.11.11.2 (11353)
Comment - EIS002271 / 0003
My concern is that within close proximity to the Yucca Mountain site, the Timbisha-Shoshone people are in the process of acquiring surplus federal lands both outside and within the boundaries of the Death Valley National Park. The tribe will be directly affected by the transportation of nuclear wastes within Inyo County and the additional transportation routes to the proposed Yucca Mountain repository. Such transportation routes will affect their pursuit of economic development and physical well-being.

To reiterate, tribal governments need assistance now. Now, not at the time the Yucca Mountain site may be approved or disapproved, or when an alternative site is considered. Such assistance would include funds to establish nuclear waste spill and contamination response teams to address accidents within proximity to tribal ancestral homelands, developed lands, watershed, affected aquifers, and affected atmospheric use areas.

Response
The Timbisha Shoshone Trust Lands are discussed in Section 8.1.2.2 of the EIS. The EIS acknowledges that, because of the proximity of some of the proposed transportation corridors, there would be potential cumulative impacts between their use and the proposed repository with regard to land use, regional water use, and transportation impacts. The analysis found that construction and operation of a branch rail line in the Bonnie Claire variation of the Caliente or Carlin Corridor would restrict access across the Scottys Junction parcel of the Timbisha Shoshone Trust Lands. If the Yucca Mountain site received approval, DOE would implement the requirements of Section 180(c) of the NWPA, which requires it to provide technical and financial assistance to states to train public safety officials of appropriate units of government and Native American tribes through whose jurisdictions it would

transport spent nuclear fuel or high-level radioactive waste. The training would cover procedures for safe transportation and for dealing with emergency response situations.

DOE has not implemented Section 180(c) of the NWPA because such action could occur only after a determination that the Yucca Mountain site is suitable as a nuclear waste repository. As stated in Appendix M of the EIS, about 5 years before shipments began DOE would notify affected states and tribes of preliminary routes the shipments could use. Because shipments would not start before 2010, DOE anticipates that such notifications would occur after 2005.

8.11.11.2 (12509)
Comment - EIS001887 / 0342
Page 6-137; Section 6.3.4 - Environmental Justice Impacts in Nevada

The Draft EIS fails to acknowledge the full range of nuclear waste transportation impacts on Native American communities, lands, and cultural resources in Nevada.

The State of Nevada considers the following Indian Reservations and Colonies in Nevada to be potentially affected by rail and truck routes identified in the Draft EIS:

-Moapa Reservation (UPRR, I-15)

-Las Vegas Reservation (Valley Rail Spur, US95)

-Ely Colony (US93)

-Duckwater Reservation (US6)

-Walker River Reservation (UPRR)

-Pyramid Lake Reservation (UPRR)

-Reno-Sparks Colony (UPRR)

-Lovelock Colony (UPRR)

-Winnemucca Colony (UPRR)

-Te-Moak Reservations [Battle Mountain, Elko, South Fork, Te-Moak, Wells] (Carlin Rail Spur, UPRR)

The Draft EIS does not define transportation-affected and potentially-affected Indian lands and resources. Nevada defines affected lands and resources to include the following: (1) reservations crossed by potential shipping routes; (2) off-reservation ceded lands, where Tribes retain treaty rights or other legally-recognized user rights, crossed by potential shipping routes; (3) reservation lands and off-reservation lands within transportation emergency evacuation zones along potential shipping routes; (4) reservation and off-reservation lands which could be contaminated by air or water transport of radioactive materials released in a severe transportation accident or terrorist incident (generally within 50 miles down-wind, down-stream, or down-gradient of a potential shipping route); (5) reservations whose highway access would be disrupted by a nuclear waste transportation emergency; and (6) off-reservation lands along potential shipping routes where Tribal personnel would likely be involved in transportation emergency response.

The Draft EIS gives insufficient consideration to the major concerns identified by potentially affected Indian Tribes in Nevada, the Western Shoshone National Council, and organizations such as the Nevada Indian Environmental Coalition and the Inter-Tribal Council of Nevada. These concerns include: (1) Tribal authority to regulate shipments across reservations; (2) emergency response planning and training for Tribal personnel; (3) advance notification of shipments and shipment monitoring; (4) protection of Native American religious and cultural sites, plants, and animals, both on and off reservations; (5) cultural implications of potential radiological contamination of Indian lands, and the cultural implications of cleanup activities involving non-tribal personnel; and (6) adverse economic

impacts of public perception of risk, especially adverse impacts on tribal tourism and recreation businesses. DOE's proposal to construct a rail spur to Yucca Mountain creates special concerns about right-of-way acquisition implications for Western Shoshone land claims (Ruby Valley Treaty) and about protection of graves, religious sites, and other cultural resources within the candidate rail corridors identified in the Draft EIS. Moreover, DOE failed to provide financial assistance to facilitate independent technical review of the Draft EIS by potentially affected Indian Tribes in Nevada.

Response

In response to public comments, DOE has revised the EIS to show the locations of Native American reservations that could be affected by transportation routes. The Department recognizes that Native American tribal governments have a unique legal and political relationship with the Government of the United States. For this reason, DOE will continue to consult and interact with tribal governments and work with representatives of the Consolidated Group of Tribes and Organizations to ensure that it considers tribal rights and concerns before making decisions or implementing programs that could affect tribes.

With regard to emergency response planning and training, DOE would provide technical and financial assistance to states to assess the need for and training of public safety officials of units of local government and tribes through whose jurisdictions it would transport spent nuclear fuel and high-level radioactive waste, as required by Section 180(c) of the NWPA. Section M.6 of the EIS discusses these requirements in detail. In addition, the Federal Radiological Program includes plans that outline the policies, procedures, roles, and responsibilities of Federal, tribal, state, and local agencies in planning for and responding to emergencies involving releases or suspected releases of radiological materials from Government facilities or operations. Training would cover procedures for safe routine transportation of these materials, as well as procedures for dealing with emergency response situations. In the event of an incident involving spent nuclear fuel or high-level radioactive waste, the transportation vehicle crew would notify local authorities and the central communications station monitoring the shipment. DOE would make resources available to local authorities, if requested, to mitigate such an incident.

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With respect to the Proposed Action, DOE has implemented worker education programs on the protection of cultural resources to limit direct impacts to such resources, especially inadvertent damage and illicit artifact collecting. If significant data recovery (artifact collection) was required during construction and operation, DOE would initiate additional involvement of Native American tribes to determine appropriate costs. If DOE made a decision about the transportation of spent nuclear fuel and high-level radioactive waste in Nevada, it would conduct additional engineering and environmental studies for the selected mode and route to provide the basis for detailed design. In addition, DOE would initiate consultations and interactions with responsible Federal, state, tribal, and local agencies to gather additional location- and community-specific information, assess potential impacts, consider mitigation measures, and conduct appropriate National Environmental Policy Act reviews.

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The EIS addresses potential risks to human health and the environment from the proposed siting, construction, operation and monitoring, and closure of a repository at Yucca Mountain. The socioeconomic impacts discussed in the EIS include quantitative effects on populations, employment, and income that would result from a decision on whether to proceed with development of the repository. However, the manner in which particular individuals might perceive risks and modify their behavior is speculative and subject to debate.